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



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Water Affairs  
REPUBLIC OF SOUTH AFRICA



# iLembe 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

### PREPARED FOR:

Co-operative Governance and Traditional Affairs

Contact Person: Mr Muzi Ngwane

Email: [muziwesipho.ngwane@misa.gov.za](mailto:muziwesipho.ngwane@misa.gov.za)

Contact No : 033 355 6568



### PREPARED BY:

LDM/SMEC South Africa (Pty) Ltd

Contact Person: Mr J.Rajcoomar

Email: [jashmer.rajcoomar@smec.com](mailto:jashmer.rajcoomar@smec.com)

Contact No: 031 277 6600



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## **LDM REPORT**

### **Final Universal Access Plan**

|                           |  |
|---------------------------|--|
| <b>Report Title:</b>      | iLembe 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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|             |                      |                   |                    |                                     |                      |

**Approved by:**

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**Signed**

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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                                      |

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## 1 EXECUTIVE SUMMARY

---

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 four Local Municipalities namely KwaDukuza, Mandeni, Maphumulo, and Ndwedwe.

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 iLembe. The water and sanitation attributes were confirmed and updated by the operational

and maintenance staff of iLembe, and water and sanitation backlogs identified. Also, captured at the engagement meeting were the existing water schemes and associated water and sanitation 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 max 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 49 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.

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.

The Statics SA Census 2011 indicates that the current population is currently at 606 810 thousand with the total number of households at 157 689. The current average growth rate is estimated at 0.83% from the 2011 Census. Table 5 below indicates the water backlogs identified from the 2011 Census data.



Table 5: Census 2011 Water Services Backlogs

| Municipality     | Number of Households | Water Served Households | Water Backlogs Households | Percentage of Water Backlogs |
|------------------|----------------------|-------------------------|---------------------------|------------------------------|
| KwaDukuza LM     | 70284                | 57733                   | 12551                     | 17.86%                       |
| Mandeni LM       | 38233                | 27246                   | 10987                     | 28.74%                       |
| Maphumulo LM     | 19972                | 6917                    | 13055                     | 65.37%                       |
| Ndwedwe LM       | 29200                | 17260                   | 11940                     | 40.89%                       |
| <b>iLembe DM</b> | <b>157689</b>        | <b>109156</b>           | <b>48533</b>              | <b>30.78%</b>                |

The total water backlogs identified from the Census data for the iLembe District Municipality is 48533 households which equates to 30.78% of the DM and the total backlogs identified from the engagements with the iLembe District Municipality using the Eskom household points are 12047 households, which is 11.31% of the DM total backlogs. Table 6 below indicates the water backlogs identified at the engagement meetings.

Table 6: Water Service Backlogs Captured at Engagement with DM

| Municipality     | 2011 Eskom Household Dwellings | Growth Rate % | Factor   | 2014 Escalated ESKOM Household Dwellings | Water Backlogs Households | Percentage of Water Backlog |
|------------------|--------------------------------|---------------|----------|--|---------------------------|-----------------------------|
| KwaDukuza LM     | 42109                          | 2.30          | 1.023    | 43078                                    | -                         | -                           |
| Mandeni LM       | 23453                          | 0.81          | 1.008    | 23992                                    | 6514                      | 27.15%                      |
| Maphumulo LM     | 16042                          | -2.21         | 1        | 16042                                    | 2395                      | 14.93%                      |
| Ndwedwe LM       | 23420                          | -0.27         | 1        | 23420                                    | 3138                      | 13.40%                      |
| <b>iLembe DM</b> | <b>105024</b>                  | <b>-</b>      | <b>-</b> | <b>106532</b>                            | <b>12047</b>              | <b>11.31%</b>               |

The backlogs for sanitation in the iLembe District Municipality from Census data reflects a total of 90457 households which equates to approximately 57.36% of the DM and a total number of 7192 households were indicated as having backlogs from the engagement meetings which equates to approximately 6.75% of the DM. 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 |
|------------------|---------------|-------------------|--------------|---------------------|
| KwaDukuza LM     | 70284         | 38784             | 31500        | 44.82%              |
| Mandeni LM       | 38233         | 16124             | 22109        | 57.83%              |
| Maphumulo LM     | 19972         | 5059              | 14913        | 74.67%              |
| Ndwedwe LM       | 29200         | 7265              | 21935        | 75.12%              |
| <b>ILembe DM</b> | <b>157689</b> | <b>67232</b>      | <b>90457</b> | <b>57.36%</b>       |

**Table 8: Sanitation Backlogs Captured at Engagement with DM**

| Municipality | Water Borne   | VIP          | Water Borne and Septic Tanks | Septic Tanks | Pit         | None        | Total Households | Percentage Backlogs |
|--------------|---------------|--------------|------------------------------|--------------|-------------|-------------|------------------|---------------------|
| KwaDukuza LM | 22524         | 16726        | 0                            | 646          | 1034        | 2147        | 43078            | 8.88%               |
| Mandeni LM   | 5477          | 17612        | 181                          | 445          | 0           | 277         | 23992            | 3.76%               |
| Maphumulo LM | 583           | 15169        | 0                            | 30           | 257         | 3           | 16042            | 1.81%               |
| Ndwedwe LM   | 0             | 21248        | 0                            | 0            | 1108        | 1064        | 23420            | 9.27%               |
| <b>Total</b> | <b>28585</b>  | <b>70755</b> | <b>181</b>                   | <b>1121</b>  | <b>2399</b> | <b>3492</b> | <b>106532</b>    | <b>6.75%</b>        |
|              | <b>99340</b>  |              | <b>7192</b>                  |              |             |             |                  |                     |
|              | <b>93.25%</b> |              | <b>6.75%</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 DM. The total cost for the 49 proposed water schemes is approximately R307 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 R66 million.

Table 11 indicates the estimated water backlogs infrastructure costs based on the conceptual schemes. Table 12 below indicates the estimated sanitation backlogs infrastructure costs based on the conceptual schemes.

Table 11: Water Infrastructural Costs

| Municipality | Total                |
|--------------|----------------------|
| KwaDukuza LM | R -                  |
| Mandeni LM   | R 141 383 102        |
| Maphumulo LM | R 103 402 190        |
| Ndwedwe LM   | R 62 474 452         |
| <b>Total</b> | <b>R 307 259 744</b> |

Table 12: Sanitation Infrastructural Costs

| Municipality  | Rate/VIP | Remaining Expenditure |
|---------------|----------|-----------------------|
| KwaDukuza LM  | R 7 000  | R 15 204 000          |
| Mandeni LM    | R 7 000  | R 41 840 291          |
| Maphumulo LM  | R 7 000  | R 7 239 771           |
| Ndwedwe LM    | R 7 000  | R 1 992 200           |
| <b>Totals</b> |          | <b>R 66 276 262</b>   |

The total cost with the study fees for the proposed water schemes is approximately R323 Million. The total cumulative cost for water and sanitation over the 5 years is approximately R422 Million which includes 10% escalation. The figure below indicates the total cumulative cost projection over the next 5 years for eradicating these backlogs.

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.

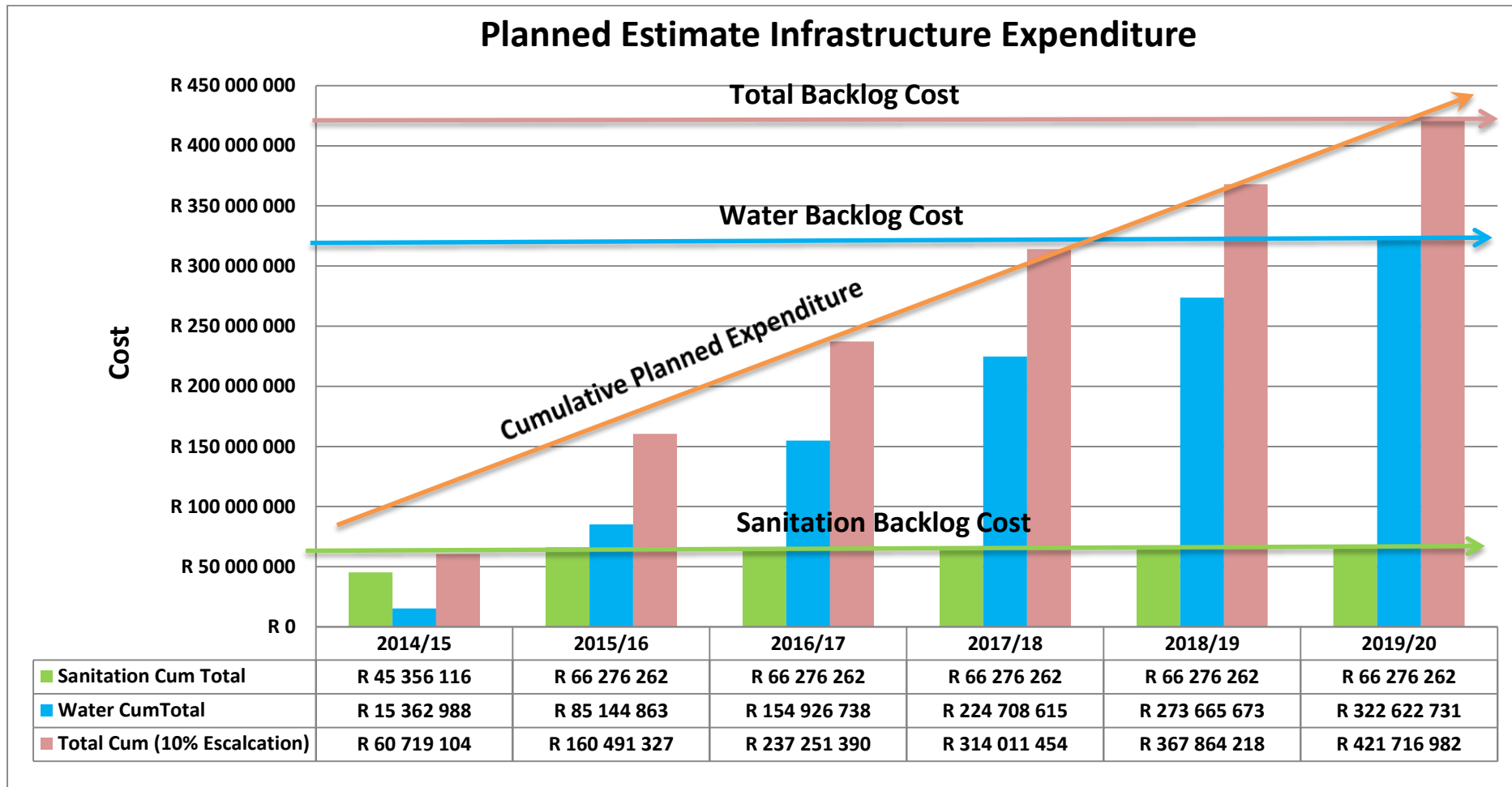


Figure 11: Water and Sanitation 5 Year Budget Plan

## 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 and the like.

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

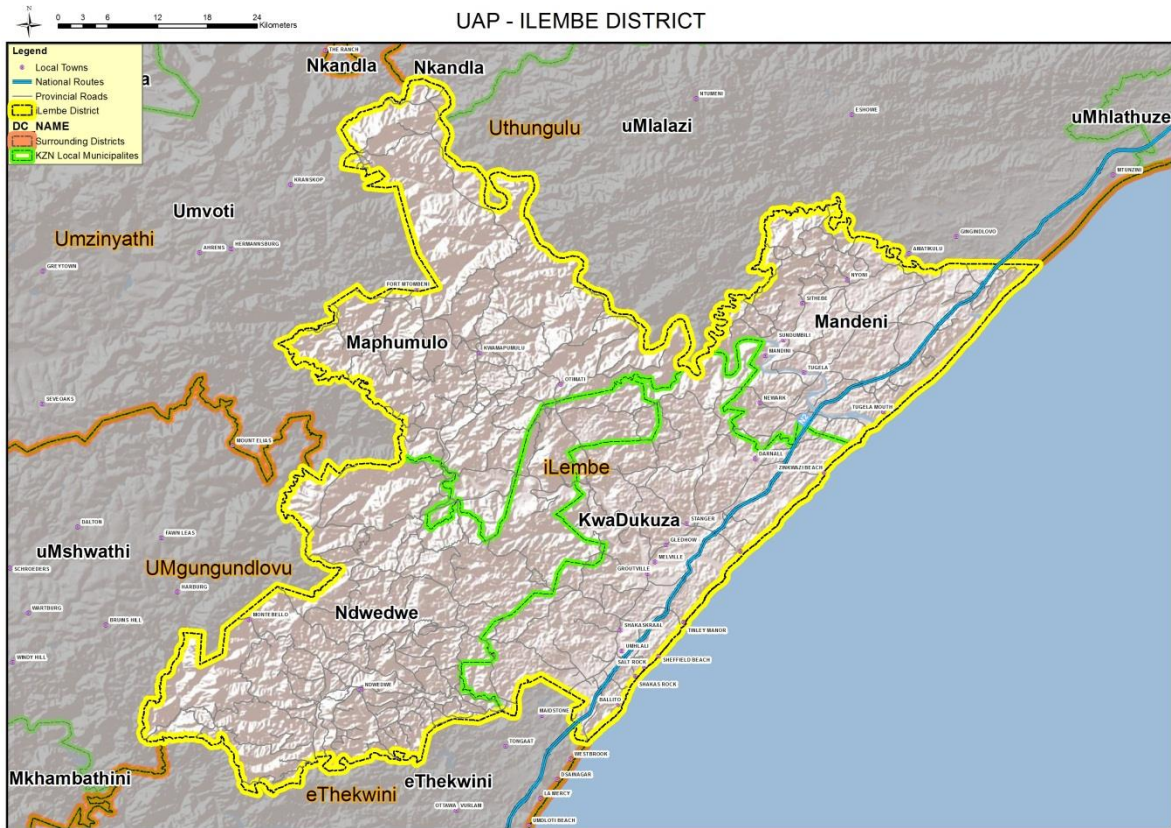
In order to develop these Universal Access Plans, specific to each District Municipality, the following guidelines have been set by Umgeni Water:

- 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 DM.

### 4 ILEMBE DISTRICT MUNICIPALITY

The ILembe District Municipality area (DC29) lies on the east coast of KwaZulu-Natal, between eThekweni in the south and the Tugela River mouth in the north; and is traversed by the N2. Furthermore, this district is located between Africa's two great ports, i.e. Durban and Richards Bay; and is approximately 10km away from King Shaka International Airport. At 3260 square kilometres, this is the smallest of the ten KZN District Municipalities. ILembe consists of four Local Municipalities, namely, KwaDukuza, Mandeni, Maphumulo and Ndwedwe.

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



**Figure 1: iLembe District Municipality Locality Map**

#### 4.1 Demographic Trends and Settlement Growth

As per the Census 2011 data of Statistic SA, the current population for iLembe is over six hundred thousand (606 810), with the total number of households counted at over one hundred and fifty thousand (157 689). The split per Local municipality is indicated in Table 1 below. The current average growth rate is estimated at 0.83% from the 2001 Census data. For an illustration of the dwellings within the iLembe District Municipality refer to Map 2 in Annexure B.

**Table 1: Local Municipality with Population Distribution**

| Municipality | KZN Code | Population Size |
|--------------|----------|-----------------|
| KwaDukuza    | KZN292   | 231 189         |
| Mandeni      | KZN291   | 138 080         |

| Municipality     | KZN Code | Population Size |
|------------------|----------|-----------------|
| Maphumulo        | KZN294   | 96 724          |
| Ndwedwe          | KZN293   | 140 817         |
| <b>ILembe DM</b> |          | <b>606 810</b>  |

Stats SA 2011

## 5 WATER AND SANITATION STATUS QUO

The ILembe DM is the Water Service Authority for each of the four local municipalities within its jurisdiction. 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. ILembe DM; 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 ILembe 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.

## 5.2 Access to Water

Table 2 below gives an indication of the various types of ‘water connections’ within the iLembe District Municipality. The following information was captured at the engagement meetings held in May with representatives from the different LM’s. Approximately 28% of the households in the iLembe District Municipality are supplied by standpipes less than 200m walking distance from the respective homes. 49% have household connections, and mainly constitute those houses located near the major towns within the District. There is a total of 14% of households that have no access to water, or access below that of RDP standards.

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

**Table 2: Access to Water**

| Access to Water | Above RDP Standards |                     |           |       | Below RDP Standards |       |       |        |              | Total  |
|-----------------|---------------------|---------------------|-----------|-------|---------------------|-------|-------|--------|--------------|--------|
|                 | House               | House and Standpipe | Standpipe | Yard  | Hand pump           | JoJo  | None  | Spring | Water Tanker |        |
| KwaDukuza       | 36595               | 0                   | 4335      | 0     | 0                   | 0     | 2147  | 0      | 0            | 43078  |
| Mandeni         | 6146                | 2878                | 8177      | 0     | 685                 | 0     | 277   | 0      | 5829         | 23992  |
| Maphumulo       | 234                 | 6031                | 7411      | 0     | 0                   | 89    | 1214  | 17     | 1046         | 16042  |
| Ndwedwe         | 9419                | 0                   | 9492      | 686   | 0                   | 0     | 413   | 0      | 3410         | 23420  |
| Total           | 52394               | 8909                | 29415     | 686   | 685                 | 89    | 4052  | 17     | 10285        | 106532 |
|                 | 49.18%              | 8.36%               | 27.61%    | 0.64% | 0.64%               | 0.08% | 3.80% | 0.02%  | 9.65%        | 100%   |
|                 | 86%                 |                     |           |       | 14%                 |       |       |        |              | 100%   |

### 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 iLembe District Municipality, and indicates that approximately 87% of all households in the District have access to water at a minimum RDP standard, while 11% 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 2% fall within privately-owned properties.

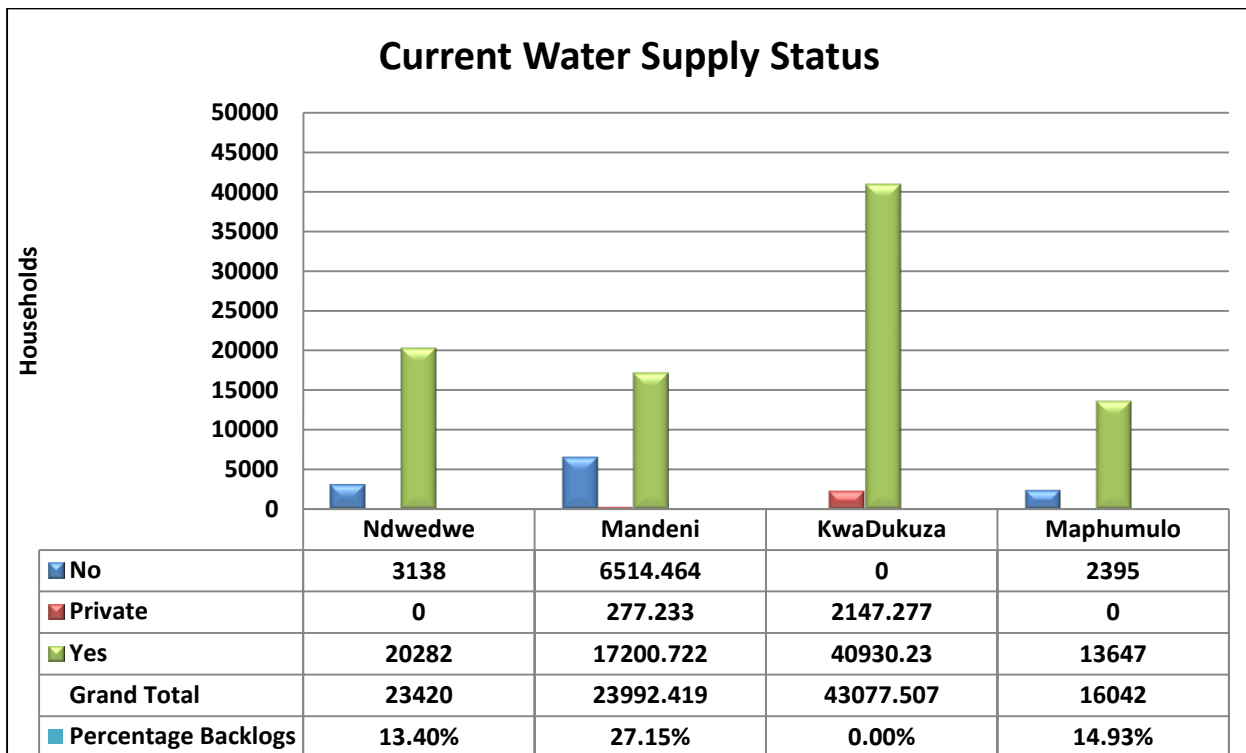


Figure 2 : Current Water Supply Status

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.

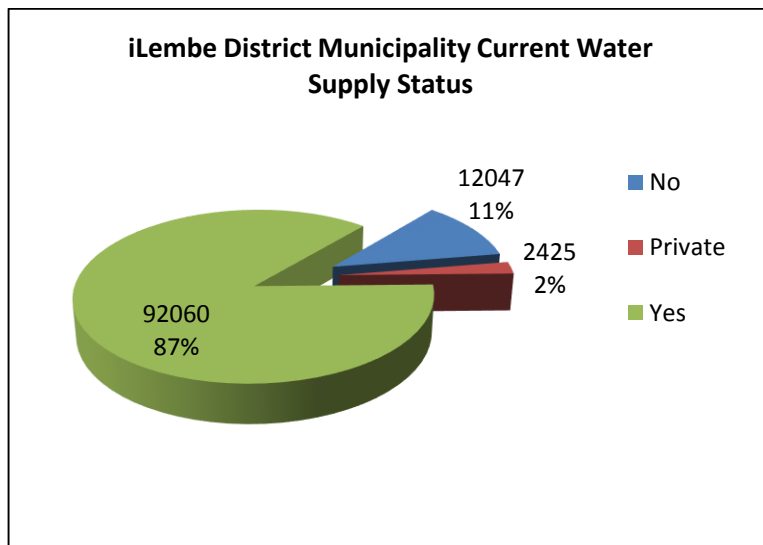


Figure 3 : Current Water Supply Status Percentage Breakdown

Refer to Map 1: iLembe 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 DM. 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 DM 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, 13, 16, and 19, in Annexure B for the illustration of water supply footprints in each of the LMs.

The establishment of footprints for sanitation provision was undertaken in a similar way to that of water supply; and areas were mapped accordingly. Sanitation infrastructure included both ventilated improved pit latrines (VIP's) and waterborne sewerage systems. Refer to Maps 12, 15, 18, and 21 in Annexure B for the illustration of sanitation supply in each of the LMs.

## 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 Umgenti 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 DMs 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 were sure of. 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 iLembe District Municipality. It was therefore essential that all data captured was accurate and reliable.

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 was collected at the engagement meetings with the Districts Municipalities, wherein which these attributes were 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 iLembe District Municipality was completed at the end of April 2014. The data collected at the Delphi/Engagement meeting was processed and the attributes updated on the Geo-Database for the iLembe 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.

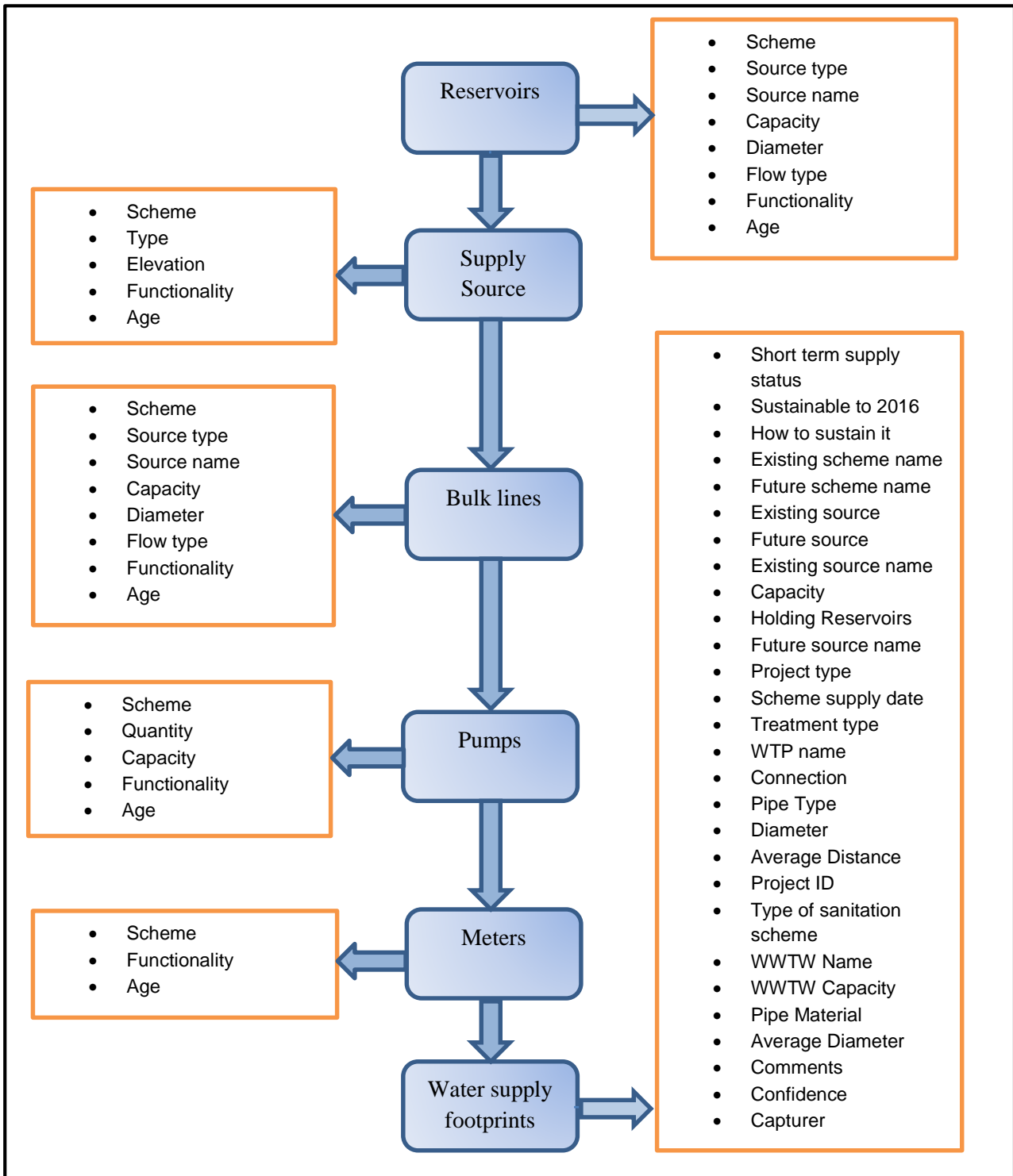


Figure 4: Water & Sanitation Attributes Data

## 7 EXISTING WATER SCHEMES

The identification of the existing water and sanitation schemes, have been determined via confirmations with the iLembe 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 LM'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

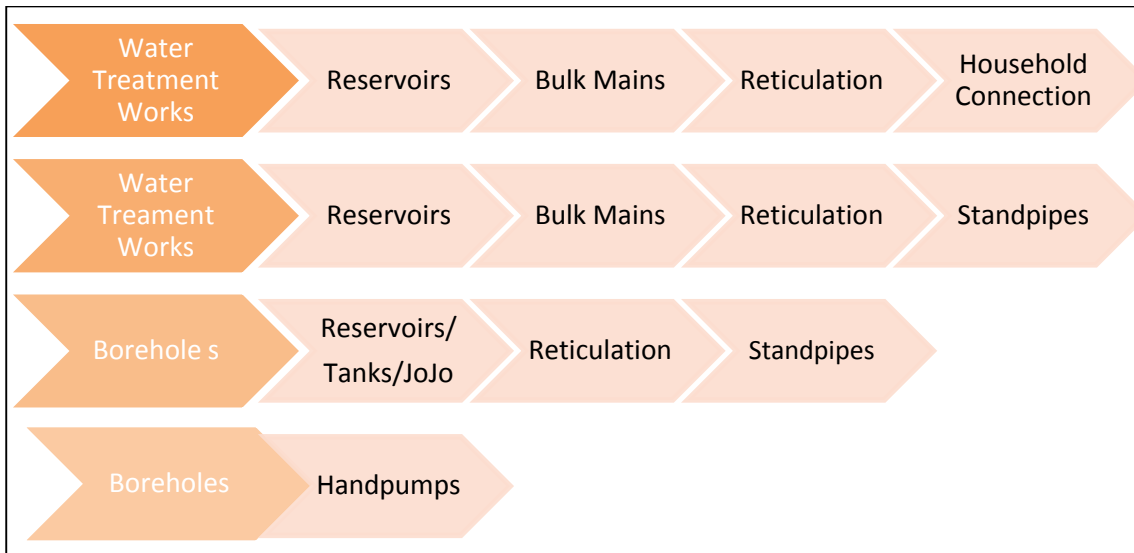


Figure 5 : Water Scheme Options

### Sanitation Scheme Options

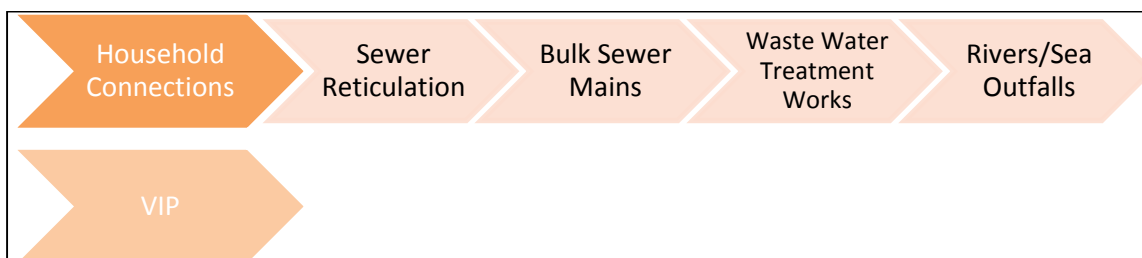


Figure 6: Sanitation Scheme Options

In total 290 schemes have been captured in the iLembe 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 LM for the iLembe District Municipality.

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

|                  | KwaDukuza | Mandeni | Maphumulo | Ndwedwe | Total |
|------------------|-----------|---------|-----------|---------|-------|
| Existing Schemes | 52        | 64      | 103       | 71      | 290   |

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.

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

| Existing Sources          | Number     |
|---------------------------|------------|
| Local Water Scheme        | 2          |
| Borehole                  | 10         |
| Borehole & Stanger Supply | 3          |
| Regional Water Scheme     | 18         |
| Reservoir                 | 149        |
| River                     | 4          |
| River Extraction          | 106        |
| Spring                    | 3          |
| Water Tanker              | 256        |
| Water Tanker and Spring   | 10         |
| <b>Total</b>              | <b>561</b> |



## 8 RECONCILIATION OF EXISTING & PROPOSED WATER SUPPLY

On completion of the engagement meetings with the iLembe 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.

In terms of water resources, iLembe has three major rivers that are used as a source of water for the District Municipality. These rivers are the Tugela, Umdloti and Umvoti, River. Other rivers that are used as a source of water for communities are the Emona, Tongati, and Umhlali Rivers. Waterborne diseases impact on the lives of the communities that rely directly on these river systems for their water supply. Refer to Map 6 for an illustration of the water resources in the iLembe District Municipality.

### 8.1 iLembe Proposed/Planned Water Schemes

Below is a description of schemes that is proposed by the iLembe District Municipality. Refer to Figure 7 for an illustration of these schemes. These schemes extend over the majority of the DM and will cover the existing schemes that are currently on the ground. These regional bulk schemes are a long term solution to providing water to households in the iLembe District Municipality. We cannot rely on these schemes to eradicate the current backlogs as these are large schemes which require a high amount of funding and there is currently no planned start or completion dates for these schemes. Some investigations should be done by Umgeni Water in order to tie in to our proposed alternate schemes which aims to eradicate backlogs as a short term solution, so that infrastructure would not have to be duplicated in the future when the regional bulk schemes get constructed.

#### 8.1.1 Balcom/Kwasizabantu Sub-Regional Water Scheme

This scheme falls within the Maphumulo LM of iLembe District Municipality. The water scheme will cover wards 3, 5 and 6 with potable water supply to basic level of service. The scheme is an extension of the Maphumulo/KwaDukuza Sub-Regional Water Scheme and is extended to cover the Balcom and KwaSizabantu area with water supply. Source of water is the Mvotshane

River where a dam and WTW will be constructed and water pumped to various storage reservoirs.

This planned scheme will serve approximately 3,532 households (28,256 people) in the Balcom and KwaSizabantu areas. The scheme also makes provision for the adjacent Magongo area in Ward 3.

### **8.1.2 Mvotshane Dam**

The Mvotshane Dam will be constructed as part of the Maphumulo/KwaDukuza Sub Regional Water Scheme. The scheme is co-funded by iLembe District Municipality and Umgeni Water, where Umgeni Water will focus on the implementation of the bulk system (including the dam) and iLembe District Municipality will focus on the reticulation networks up to stand pipes.

The scheme will cover wards 4, 7, 8, 9, 10 and 11 of Maphumulo LM and wards 1, 2, 3, 4 and 7 of Ndwedwe LM. The scheme will serve a total of 77,900 people residing in some 17,084 households.

### **8.1.3 Ndulinde Sub-Regional Water Supply**

This scheme falls within wards 5, 6 and 11 of Mandeni LM. The scheme is intended to provide potable water supply to the community that is currently being served through boreholes that are equipped with hand-pumps and some springs that are within the area. The source of water is from reservoir C that is fed from the Sundumbili Water Works, which is situated on the northern banks of the Thukela River. The scheme will serve a total of 42,752 people residing in some 10,691 households.

### **8.1.4 Macambini Sub-Regional Water Supply**

The Macambini Sub – Regional Water Scheme falls within wards 1, 2, 3, 8 and 9 of Mandeni LM. The scheme is intended to provide potable water at a basic level of service to the community that is currently being served through boreholes that are equipped with hand pumps and some springs. The scheme will also act as a bulk water provider to iLembe District Municipality.

During dry seasons, uThungulu DM is unable to meet iLembe District Municipality's demand who act as a bulk water services provider to iLembe District Municipality. The source of water

will be the Sundumbili Water Works which will need to be upgraded from 27MI/d to 40MI/d in order to cater for the demand.

The scheme will serve a total of 58,480 people residing in some 7,310 households.

### 8.1.5 Lower Thukela Regional Bulk Water Scheme

The scheme is the largest of the schemes and is intended to serve the area of KwaDukuza with portable water supply. The demand for water on the coastal area of KwaDukuza has increased and the current supply from Umdloti and Umvoti river systems are insufficient to meet the projected water demand.

The scheme will serve a total of 64,239 bulk connections to commercial and private units, 28,567 low cost housing, augmentation of bulk to 3,349 rural households and bulk and reticulation to 3.083 rural households without water.

## 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.

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 Maps 4 and 9 in Annexure B for the illustration of the water and sanitation backlogs respectively.

Table 5 indicates the backlogs in terms of households for each LM and for the DM that have been identified from the 2011 census data. From here we can see that the LM with the greatest amount of backlogs is Maphumulo with a backlog of 66%. KwaDukuza has the lowest amount of backlogs of approximately 18%. In terms of households, each of the LM's has backlogs greater than 10 000 households. The total backlogs identified from the Census data for the iLembe District Municipality is 48533 households which equates to 31% of the DM.

Table 6 indicates the backlogs that have been captured from the engagement meetings with the iLembe 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 5000 in the total number of households in the iLembe District Municipality from Census 2011 data. We have used the ESKOM household data as the correct number of households in the iLembe District Municipality. The total backlogs identified from the engagements with the iLembe District Municipality using the Eskom household points are 12047 households, which is 11% of the DM. It is also noted that from the engagement meetings KwaDukuza is indicated as not having any water backlogs.

The discrepancy in the household points of approximately 5000 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 |
|------------------|----------------------|-------------------------|---------------------------|------------------------------|
| KwaDukuza LM     | 70284                | 57733                   | 12551                     | 17.86%                       |
| Mandeni LM       | 38233                | 27246                   | 10987                     | 28.74%                       |
| Maphumulo LM     | 19972                | 6917                    | 13055                     | 65.37%                       |
| Ndwedwe LM       | 29200                | 17260                   | 11940                     | 40.89%                       |
| <b>iLembe DM</b> | <b>157689</b>        | <b>109156</b>           | <b>48533</b>              | <b>30.78%</b>                |

The Eskom household data that was received was based on 2011 data and has been factored to reflect as 2014 household counts. Where LM'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 Service Backlogs Captured at Engagement with DM**

| Municipality     | 2011 Eskom Household Dwellings | Growth Rate % | Factor   | 2014 Escalated ESKOM Household Dwellings | Water Backlogs Households | Percentage of Water Backlog |
|------------------|--------------------------------|---------------|----------|--|---------------------------|-----------------------------|
| KwaDukuza LM     | 42109                          | 2.30          | 1.023    | 43078                                    | -                         | -                           |
| Mandeni LM       | 23453                          | 0.81          | 1.008    | 23992                                    | 6514                      | 27.15%                      |
| Maphumulo LM     | 16042                          | -2.21         | 1        | 16042                                    | 2395                      | 14.93%                      |
| Ndwedwe LM       | 23420                          | -0.27         | 1        | 23420                                    | 3138                      | 13.40%                      |
| <b>iLembe DM</b> | <b>105024</b>                  | <b>-</b>      | <b>-</b> | <b>106532</b>                            | <b>12047</b>              | <b>11.31%</b>               |

### 8.3 Sanitation Backlogs

Table 7 below indicates the backlogs in sanitation captured in the 2011 Census with a total of 157 689 households recorded. There is a high percentage of backlogs for sanitation in the iLembe District Municipality with a total of 90457 households which equates to approximately 57%.

Table 8 below indicates the backlogs in sanitation captured at the engagement meetings. A total number of 7192 households were indicated as having sanitation below that of RDP standards, and thus being a backlog. This equates to approximately 7% of the iLembe District Municipality. Refer to Maps 7 and 8 in Annexure B for the illustration of the sanitation supply and the sanitation types for the iLembe District Municipality respectively.

**Table 7: Census 2011 Sanitation Backlogs**

| Municipality     | Households    | Sanitation Served | Backlogs     | Percentage Backlogs |
|------------------|---------------|-------------------|--------------|---------------------|
| KwaDukuza LM     | 70284         | 38784             | 31500        | 44.82%              |
| Mandeni LM       | 38233         | 16124             | 22109        | 57.83%              |
| Maphumulo LM     | 19972         | 5059              | 14913        | 74.67%              |
| Ndwedwe LM       | 29200         | 7265              | 21935        | 75.12%              |
| <b>iLembe DM</b> | <b>157689</b> | <b>67232</b>      | <b>90457</b> | <b>57.36%</b>       |

**Table 8: Sanitation Backlogs Captured at Engagement with DM**

| Municipality | Water Borne   | VIP          | Water Bourne and Septic Tanks | Septic Tanks | Pit         | None        | Total Households | Percentage Backlogs |
|--------------|---------------|--------------|-------------------------------|--------------|-------------|-------------|------------------|---------------------|
| KwaDukuza LM | 22524         | 16726        | 0                             | 646          | 1034        | 2147        | 43078            | 8.88%               |
| Mandeni LM   | 5477          | 17612        | 181                           | 445          | 0           | 277         | 23992            | 3.76%               |
| Maphumulo LM | 583           | 15169        | 0                             | 30           | 257         | 3           | 16042            | 1.81%               |
| Ndwedwe LM   | 0             | 21248        | 0                             | 0            | 1108        | 1064        | 23420            | 9.27%               |
| <b>Total</b> | <b>28585</b>  | <b>70755</b> | <b>181</b>                    | <b>1121</b>  | <b>2399</b> | <b>3492</b> | <b>106532</b>    | <b>6.75%</b>        |
|              | <b>99340</b>  |              | <b>7192</b>                   |              |             |             |                  |                     |
|              | <b>93.25%</b> |              | <b>6.75%</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: iLembe District Level of Service**

| Water Level of Service   | Comments   |
|--|--|
| <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  |

| Sanitation Level of Service                             | Comments   |
|---|--|
| <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>                                |

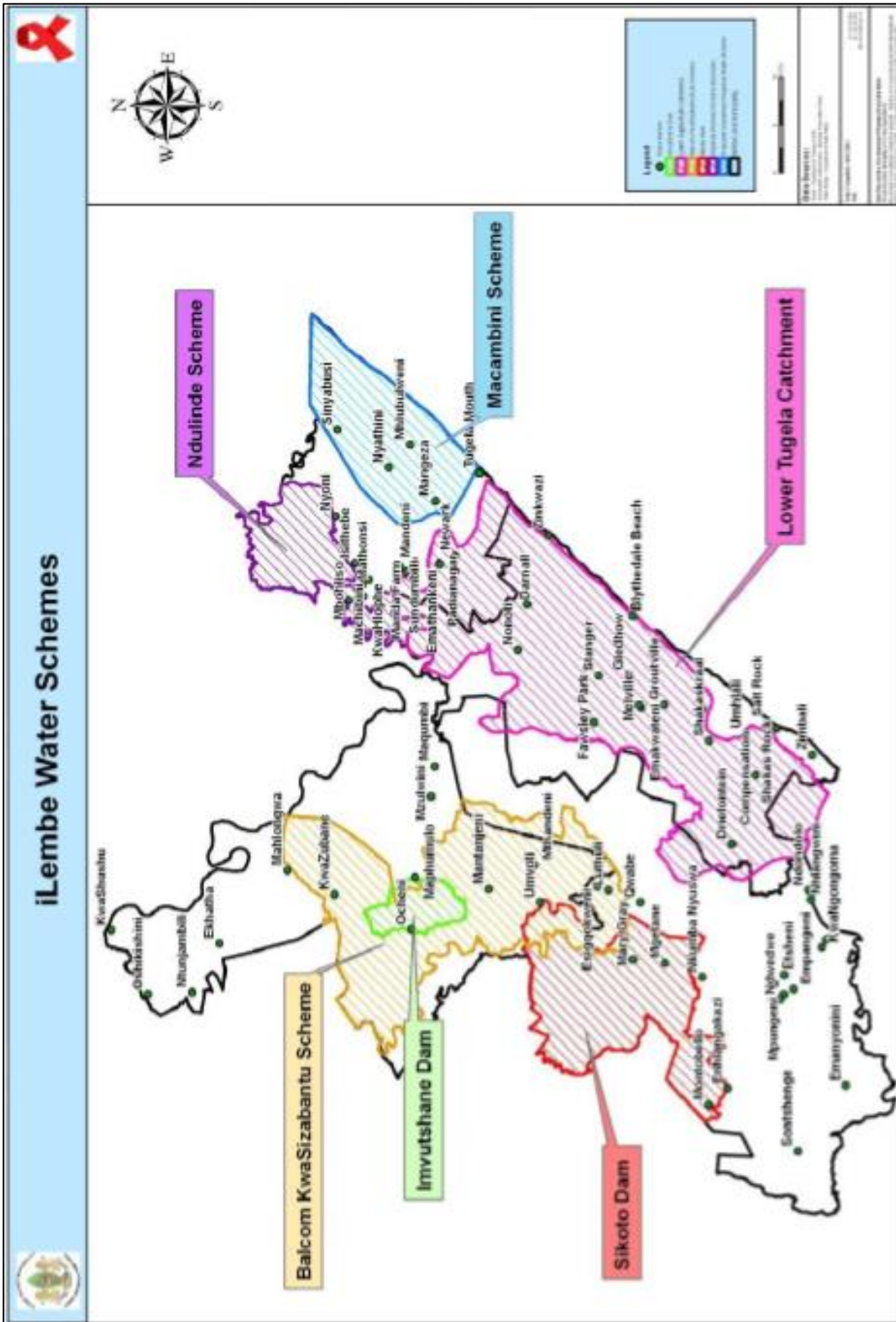


Figure 7: iLembe Proposed Schemes



## 9 PLANNED AND PROPOSED WATER & SANITATION SCHEMES

### 9.1 Conceptual Design Approach

Various engagements meetings were held with the iLembe 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 11 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.

An illustrative example of the proposed schemes that can be found in the geo-data base can be seen in figures 8, 9, and 10 below. Figure 8 represents a scheme where water is obtained from a river and is pumped up to a WTW, and then it is pumped to 4 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 9. Figure 10 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 stand pipes.

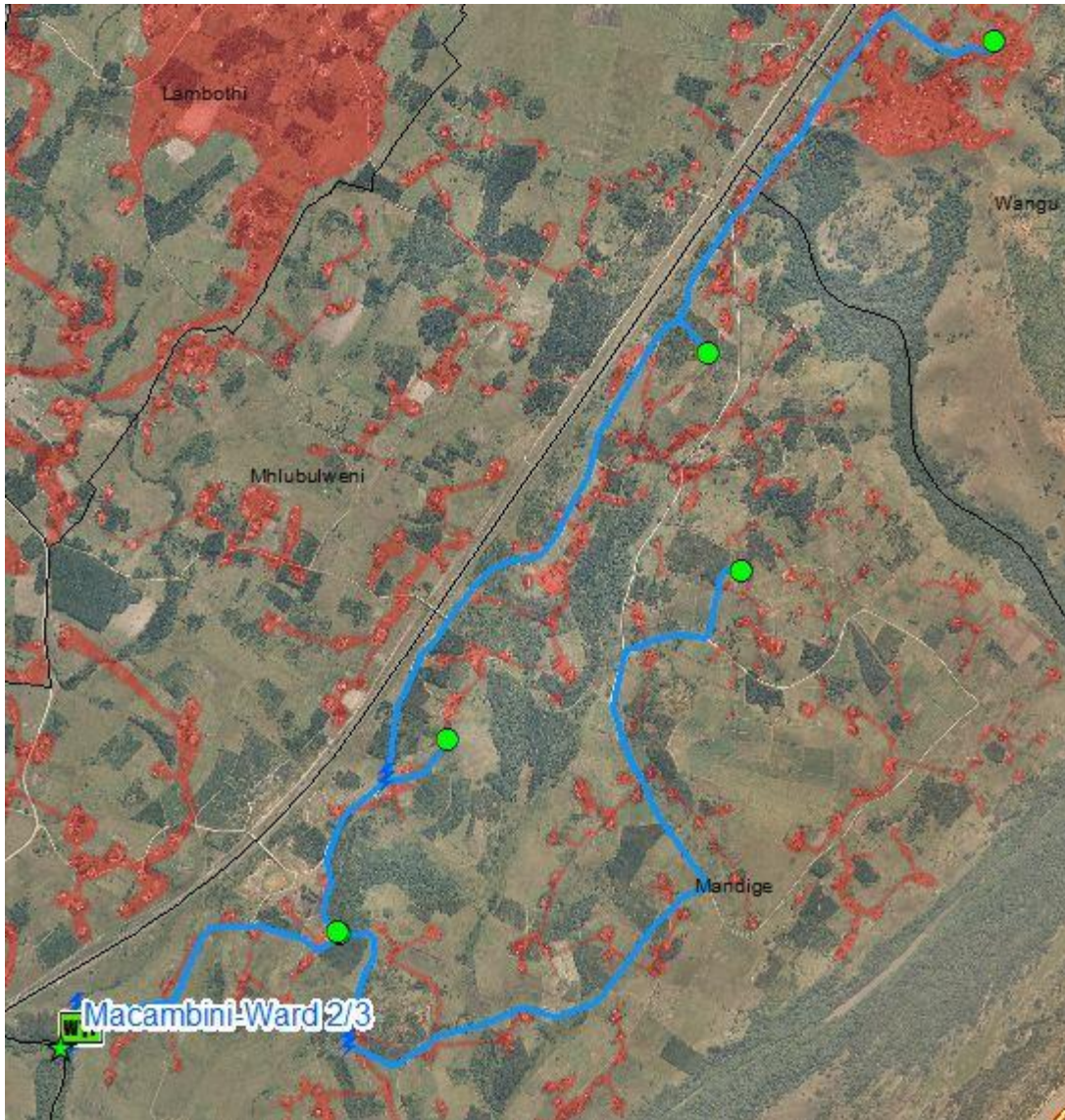


Figure 8: WTW to Reservoir Scheme

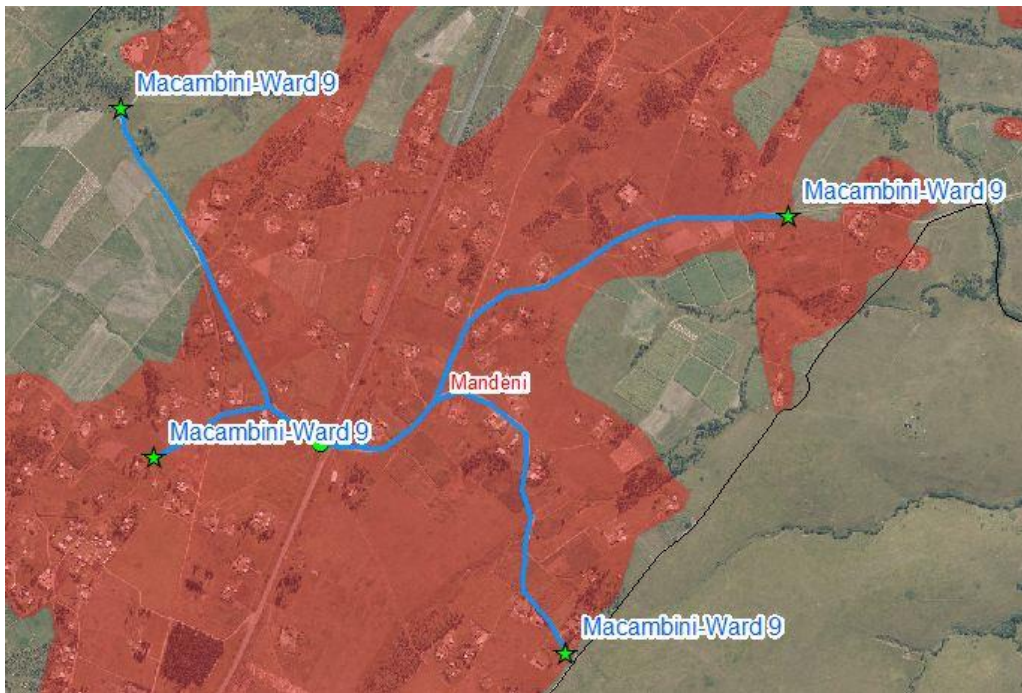


Figure 9: Borehole to Reservoir Scheme

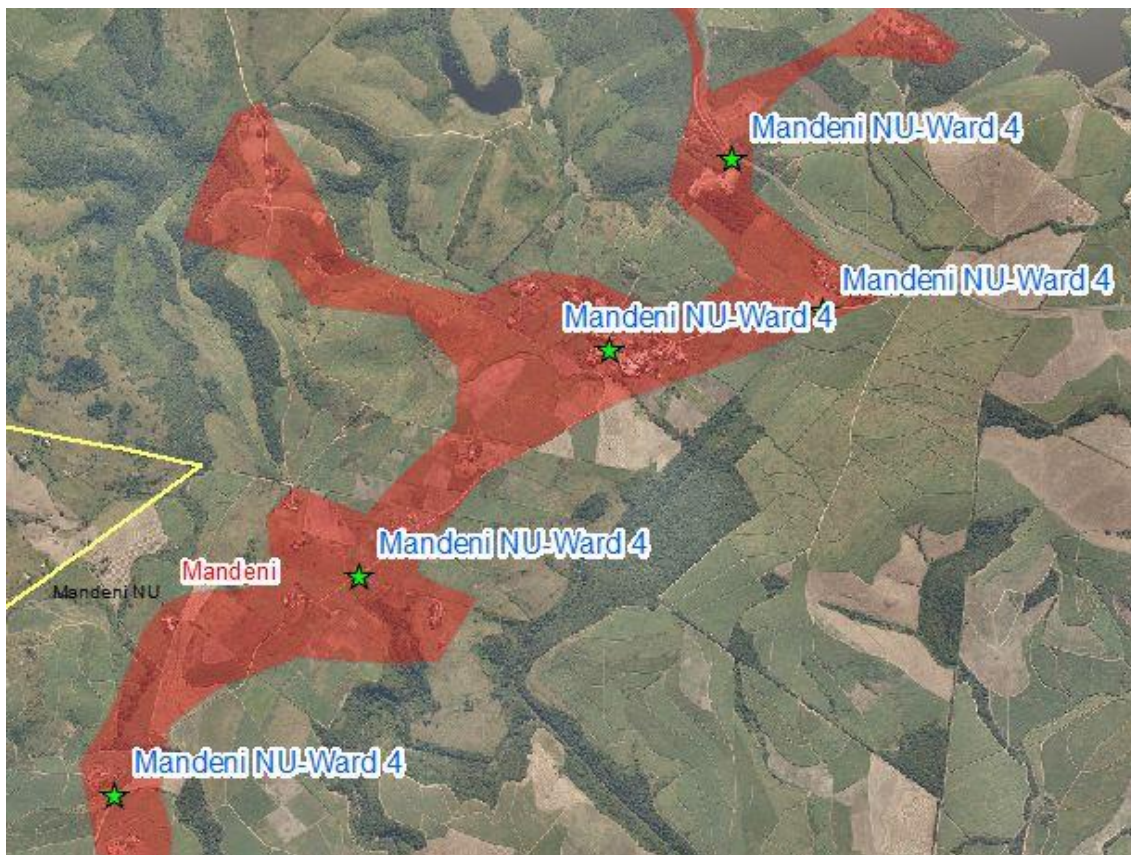


Figure 10: Borehole with Hand Pumps Scheme

## 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 14, 17, and 20 in Annexure B for the illustration of the proposed alternate schemes in each of the LMs 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 kitchen & bathroom, informal household                              | 1- 9600                       | 60                      | 100  | 140  |
| 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 LM for the iLembe 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 iLembe District Municipality is approximately R307 Million. A summarised list of the infrastructure in each proposed scheme and the cost associated to it is listed in Table 14. It must be noted that the KwaDukuza LM has no water intervention/backlogs as specified during the engagement meetings with the DM.

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                |
|--------------------|----------------------|
| KwaDukuza          | R -                  |
| Mandeni            | R 141 383 102        |
| Maphumulo          | R 103 402 190        |
| Ndwedwe            | R 62 474 452         |
| <b>Total</b>       | <b>R 307 259 744</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 iLembe District Municipality is approximately R66 Million.

**Table 12: Sanitation Infrastructural Costs**

| <b>LM Name</b> | <b>Rate/VIP</b> | <b>Remaining Expenditure</b> |
|----------------|-----------------|------------------------------|
| KwaDukuza      | R 7 000         | <b>R 15 204 000</b>          |
| Mandeni        | R 7 000         | <b>R 41 840 291</b>          |
| Maphumulo      | R 7 000         | <b>R 7 239 771</b>           |
| Ndwedwe        | R 7 000         | <b>R 1 992 200</b>           |
| <b>Totals</b>  |                 | <b>R 66 276 262</b>          |

#### **9.4 Five Year Budget Plan for Water and Sanitation**

Table 13 indicates the estimated short term budget expenditure. This estimate is based on the current sanitation projects currently being undertaken. The estimated expenditure per year for the next five (5) years is based on the average expenditure over the last 5 years from the three service providers that are currently undertaking and eradicating the backlogs in the three (3) LM's.

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 iLembe District Municipality having the funds to undertake these studies. The total cumulative cost to eradicate the water backlogs with 49 proposed schemes and the sanitation backlogs over the 5 years is approximately R422 Million 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 in figure 11 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>KwaDukuza (Water)</b>      | R -                 | R -                  | R -                  | R -                  | R -                  | R -                  |
| <b>KwaDukuza (Sanitation)</b> | R 15 204 000        | R -                  | R -                  | R -                  | R -                  | R -                  |
| <b>Mandeni (Water)</b>        | R 7 069 155         | R 28 276 620         | R 28 276 620         | R 28 276 620         | R 28 276 620         | R 28 276 620         |
| <b>Mandeni (Sanitation)</b>   | R 20 920 146        | R 20 920 146         | R -                  | R -                  | R -                  | R -                  |
| <b>Maphumulo (Water)</b>      | R 5 170 110         | R 20 680 438         | R 20 680 438         | R 20 680 438         | R 20 680 438         | R 20 680 438         |
| <b>Maphumulo (Sanitation)</b> | R 7 239 771         | R -                  | R -                  | R -                  | R -                  | R -                  |
| <b>Ndwedwe (Water)</b>        | R 3 123 723         | R 20 824 817         | R 20 824 817         | R 20 824 817         | R -                  | R -                  |
| <b>Ndwedwe (Sanitation)</b>   | R 1 992 200         | R -                  | R -                  | R -                  | R -                  | R -                  |
| <b>Totals</b>                 | <b>R 60 719 104</b> | <b>R 90 702 021</b>  | <b>R 69 781 876</b>  | <b>R 69 781 876</b>  | <b>R 48 957 058</b>  | <b>R 48 957 058</b>  |
| <b>Escalation (10%)</b>       | <b>R -</b>          | <b>R 99 772 223</b>  | <b>R 76 760 063</b>  | <b>R 76 760 063</b>  | <b>R 53 852 764</b>  | <b>R 53 852 764</b>  |
| <b>Cumulative Total</b>       | <b>R 60 719 104</b> | <b>R 160 491 327</b> | <b>R 237 251 390</b> | <b>R 314 011 454</b> | <b>R 367 864 218</b> | <b>R 421 716 982</b> |



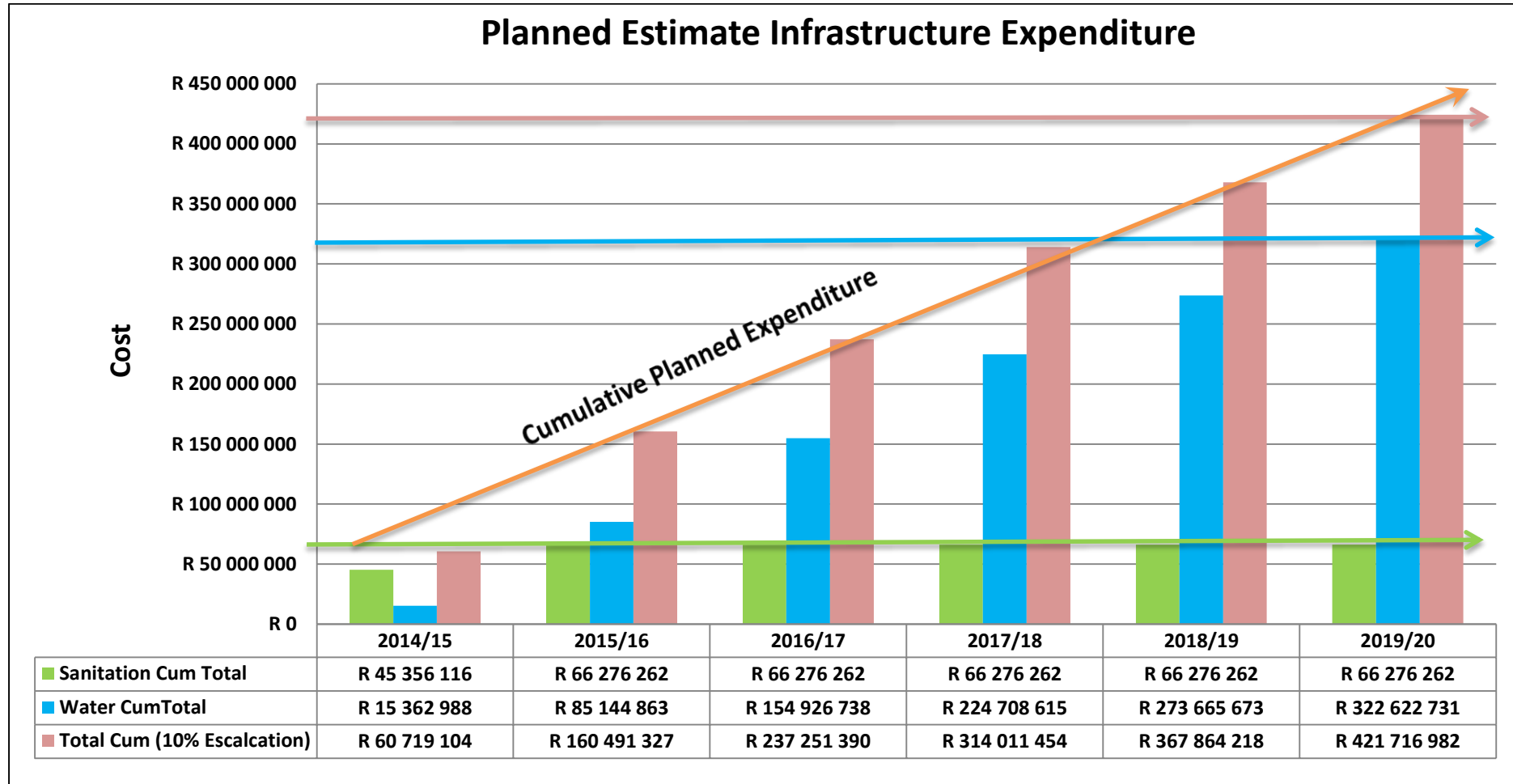


Figure 11: Water and Sanitation 5 Year Budget Plan

**Table 14: Proposed Alternate Schemes**

| Scheme Name              | Type         | Name                    | Local Municipality | Infrastructure Cost | Total Cost         |
|--------------------------|--------------|-------------------------|--------------------|---------------------|--------------------|
| Mandeni NU-Ward 4        | Borehole     | Borehole 01 UAPILEMAN01 | Mandeni            | R 270 000           |                    |
| Mandeni NU-Ward 4        | Borehole     | Borehole 02 UAPILEMAN01 | Mandeni            | R 270 000           |                    |
| Mandeni NU-Ward 4        | Borehole     | Borehole 03 UAPILEMAN01 | Mandeni            | R 270 000           |                    |
| Mandeni NU-Ward 4        | Borehole     | Borehole 04 UAPILEMAN01 | Mandeni            | R 270 000           |                    |
| Mandeni NU-Ward 4        | Borehole     | Borehole 05 UAPILEMAN01 | Mandeni            | R 270 000           |                    |
| <b>Mandeni NU-Ward 4</b> | <b>Total</b> |                         |                    |                     | <b>R 1 350 000</b> |
| Mtunzini-Ward 3/1        | Borehole     | Borehole 01 UAPILEMAN02 | Mandeni            | R 300 000           |                    |
| Mtunzini-Ward 3/1        | Borehole     | Borehole 02 UAPILEMAN02 | Mandeni            | R 300 000           |                    |
| Mtunzini-Ward 3/1        | Reservoir    | Res UAPILEMAN02         | Mandeni            | R 478 652           |                    |
| Mtunzini-Ward 3/1        | Bulk Line    | Borehole 01 UAPILEMAN02 | Mandeni            | R 134 340           |                    |
| Mtunzini-Ward 3/1        | Bulk Line    | Borehole 02 UAPILEMAN02 | Mandeni            | R 491 870           |                    |
| Mtunzini-Ward 3/1        | Reticulation | RET_UAPILEMAN02         | Mandeni            | R 681 944           |                    |
| <b>Mtunzini-Ward 3/1</b> | <b>Total</b> |                         |                    |                     | <b>R 2 386 805</b> |
| Mtunzini-Ward 3/2        | Borehole     | Borehole 01 UAPILEMAN03 | Mandeni            | R 300 000           |                    |
| Mtunzini-Ward 3/2        | Borehole     | Borehole 02 UAPILEMAN03 | Mandeni            | R 300 000           |                    |
| Mtunzini-Ward 3/2        | Reservoir    | Res UAPILEMAN03         | Mandeni            | R 478 652           |                    |
| Mtunzini-Ward 3/2        | Bulk Line    | Borehole 01 UAPILEMAN03 | Mandeni            | R 355 872           |                    |
| Mtunzini-Ward 3/2        | Bulk Line    | Borehole 02 UAPILEMAN03 | Mandeni            | R 543 916           |                    |
| Mtunzini-Ward 3/2        | Reticulation | RET_UAPILEMAN03         | Mandeni            | R 791 376           |                    |
| <b>Mtunzini-Ward 3/2</b> | <b>Total</b> |                         |                    |                     | <b>R 2 769 815</b> |
| Mtunzini-Ward 3/3        | Borehole     | Borehole 01 UAPILEMAN04 | Mandeni            | R 300 000           |                    |
| Mtunzini-Ward 3/3        | Borehole     | Borehole 02 UAPILEMAN04 | Mandeni            | R 300 000           |                    |
| Mtunzini-Ward 3/3        | Reservoir    | Res UAPILEMAN04         | Mandeni            | R 740 757           |                    |

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| Scheme Name               | Type         | Name                    | Local Municipality | Infrastructure Cost | Total Cost          |
|---------------------------|--------------|-------------------------|--------------------|---------------------|---------------------|
| Mtunzini-Ward 3/3         | Bulk Line    | Borehole 01 UAPILEMAN04 | Mandeni            | R 273 748           |                     |
| Mtunzini-Ward 3/3         | Bulk Line    | Borehole 02 UAPILEMAN04 | Mandeni            | R 301 084           |                     |
| Mtunzini-Ward 3/3         | Reticulation | RET_UAPILEMAN04         | Mandeni            | R 766 236           |                     |
| <b>Mtunzini-Ward 3/3</b>  | <b>Total</b> |                         |                    |                     | <b>R 2 681 825</b>  |
| Macambini-Ward 2/1        | Borehole     | Borehole 01 UAPILEMAN05 | Mandeni            | R 300 000           |                     |
| Macambini-Ward 2/1        | Borehole     | Borehole 02 UAPILEMAN05 | Mandeni            | R 300 000           |                     |
| Macambini-Ward 2/1        | Borehole     | Borehole 03 UAPILEMAN05 | Mandeni            | R 300 000           |                     |
| Macambini-Ward 2/1        | Borehole     | Borehole 04 UAPILEMAN05 | Mandeni            | R 300 000           |                     |
| Macambini-Ward 2/1        | Borehole     | Borehole 05 UAPILEMAN05 | Mandeni            | R 300 000           |                     |
| Macambini-Ward 2/1        | Borehole     | Borehole 06 UAPILEMAN05 | Mandeni            | R 300 000           |                     |
| Macambini-Ward 2/1        | Reservoir    | Res 01 UAPILEMAN05      | Mandeni            | R 478 652           |                     |
| Macambini-Ward 2/1        | Reservoir    | Res 02 UAPILEMAN05      | Mandeni            | R 478 652           |                     |
| Macambini-Ward 2/1        | Reservoir    | Res 03 UAPILEMAN05      | Mandeni            | R 478 652           |                     |
| Macambini-Ward 2/1        | Bulk Line    | Borehole 01 UAPILEMAN05 | Mandeni            | R 235 331           |                     |
| Macambini-Ward 2/1        | Bulk Line    | Borehole 02 UAPILEMAN05 | Mandeni            | R 170 986           |                     |
| Macambini-Ward 2/1        | Bulk Line    | Borehole 03 UAPILEMAN05 | Mandeni            | R 193 134           |                     |
| Macambini-Ward 2/1        | Bulk Line    | Borehole 04 UAPILEMAN05 | Mandeni            | R 347 022           |                     |
| Macambini-Ward 2/1        | Bulk Line    | Borehole 06 UAPILEMAN05 | Mandeni            | R 207 613           |                     |
| Macambini-Ward 2/1        | Bulk Line    | Borehole 05 UAPILEMAN05 | Mandeni            | R 223 320           |                     |
| Macambini-Ward 2/1        | Bulk Line    | Res 01 UAPILEMAN05      | Mandeni            | R 615 356           |                     |
| Macambini-Ward 2/1        | Bulk Line    | Res 02 UAPILEMAN05      | Mandeni            | R 1 247 632         |                     |
| Macambini-Ward 2/1        | Pumpstation  | Pump_UAPILEMAN05        | Mandeni            | R 1 315 181         |                     |
| Macambini-Ward 2/1        | Reticulation | RET_UAPILEMAN05         | Mandeni            | R 3 116 612         |                     |
| <b>Macambini-Ward 2/1</b> | <b>Total</b> |                         |                    |                     | <b>R 10 908 142</b> |

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| Scheme Name              | Type         | Name                    | Local Municipality | Infrastructure Cost | Total Cost          |
|--------------------------|--------------|-------------------------|--------------------|---------------------|---------------------|
| Mangqakaza-Ward 3        | Borehole     | Borehole 01 UAPILEMAN06 | Mandeni            | R 300 000           |                     |
| Mangqakaza-Ward 3        | Borehole     | Borehole 02 UAPILEMAN06 | Mandeni            | R 300 000           |                     |
| Mangqakaza-Ward 3        | Borehole     | Borehole 03 UAPILEMAN06 | Mandeni            | R 300 000           |                     |
| Mangqakaza-Ward 3        | Borehole     | Borehole 04 UAPILEMAN06 | Mandeni            | R 300 000           |                     |
| Mangqakaza-Ward 3        | Borehole     | Borehole 05 UAPILEMAN06 | Mandeni            | R 300 000           |                     |
| Mangqakaza-Ward 3        | Borehole     | Borehole 06 UAPILEMAN06 | Mandeni            | R 300 000           |                     |
| Mangqakaza-Ward 3        | Reservoir    | Res 01 UAPILEMAN06      | Mandeni            | R 656 852           |                     |
| Mangqakaza-Ward 3        | Reservoir    | Res 02 UAPILEMAN06      | Mandeni            | R 656 852           |                     |
| Mangqakaza-Ward 3        | Reservoir    | Res 03 UAPILEMAN06      | Mandeni            | R 656 852           |                     |
| Mangqakaza-Ward 3        | Bulk Line    | Borehole 02 UAPILEMAN06 | Mandeni            | R 250 123           |                     |
| Mangqakaza-Ward 3        | Bulk Line    | Borehole 01 UAPILEMAN06 | Mandeni            | R 217 665           |                     |
| Mangqakaza-Ward 3        | Bulk Line    | Borehole 03 UAPILEMAN06 | Mandeni            | R 388 108           |                     |
| Mangqakaza-Ward 3        | Bulk Line    | Borehole 04 UAPILEMAN06 | Mandeni            | R 297 918           |                     |
| Mangqakaza-Ward 3        | Bulk Line    | Pump_UAPILEMAN06        | Mandeni            | R 514 995           |                     |
| Mangqakaza-Ward 3        | Bulk Line    | Borehole 06 UAPILEMAN06 | Mandeni            | R 429 545           |                     |
| Mangqakaza-Ward 3        | Bulk Line    | Borehole 05 UAPILEMAN06 | Mandeni            | R 423 782           |                     |
| Mangqakaza-Ward 3        | Bulk Line    | Res 01 UAPILEMAN06      | Mandeni            | R 1 987 830         |                     |
| Mangqakaza-Ward 3        | Bulk Line    | Res 02 UAPILEMAN06      | Mandeni            | R 1 828 792         |                     |
| Mangqakaza-Ward 3        | Pumpstation  | Pump_UAPILEMAN06        | Mandeni            | R 1 315 181         |                     |
| Mangqakaza-Ward 3        | Reticulation | RET_UAPILEMAN06         | Mandeni            | R 4 569 798         |                     |
| <b>Mangqakaza-Ward 3</b> | <b>Total</b> |                         |                    |                     | <b>R 15 994 291</b> |
| Macambini-Ward 2/2       | Borehole     | Borehole 01 UAPILEMAN07 | Mandeni            | R 300 000           |                     |
| Macambini-Ward 2/2       | Borehole     | Borehole 02 UAPILEMAN07 | Mandeni            | R 300 000           |                     |
| Macambini-Ward 2/2       | Borehole     | Borehole 03 UAPILEMAN07 | Mandeni            | R 300 000           |                     |

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| Scheme Name               | Type         | Name                    | Local Municipality | Infrastructure Cost | Total Cost          |
|---------------------------|--------------|-------------------------|--------------------|---------------------|---------------------|
| Macambini-Ward 2/2        | Borehole     | Borehole 04 UAPILEMAN07 | Mandeni            | R 300 000           |                     |
| Macambini-Ward 2/2        | Borehole     | Borehole 05 UAPILEMAN07 | Mandeni            | R 300 000           |                     |
| Macambini-Ward 2/2        | Borehole     | Borehole 06 UAPILEMAN07 | Mandeni            | R 300 000           |                     |
| Macambini-Ward 2/2        | Reservoir    | Res 01 UAPILEMAN07      | Mandeni            | R 824 662           |                     |
| Macambini-Ward 2/2        | Reservoir    | Res 02 UAPILEMAN07      | Mandeni            | R 824 662           |                     |
| Macambini-Ward 2/2        | Reservoir    | Res 03 UAPILEMAN07      | Mandeni            | R 824 662           |                     |
| Macambini-Ward 2/2        | Bulk Line    | Borehole 01 UAPELIMAN07 | Mandeni            | R 808 404           |                     |
| Macambini-Ward 2/2        | Bulk Line    | Borehole 04 UAPELIMAN07 | Mandeni            | R 299 464           |                     |
| Macambini-Ward 2/2        | Bulk Line    | Borehole 02 UAPELIMAN07 | Mandeni            | R 625 706           |                     |
| Macambini-Ward 2/2        | Bulk Line    | Borehole 06 UAPELIMAN07 | Mandeni            | R 436 766           |                     |
| Macambini-Ward 2/2        | Bulk Line    | Borehole 03 UAPELIMAN07 | Mandeni            | R 414 513           |                     |
| Macambini-Ward 2/2        | Bulk Line    | Borehole 05 UAPELIMAN07 | Mandeni            | R 673 242           |                     |
| Macambini-Ward 2/2        | Bulk Line    | Pump 01_UAPILEMAN07     | Mandeni            | R 243 161           |                     |
| Macambini-Ward 2/2        | Bulk Line    | Pump 02_UAPILEMAN07     | Mandeni            | R 236 720           |                     |
| Macambini-Ward 2/2        | Bulk Line    | Res 01 UAPILEMAN07      | Mandeni            | R 268 854           |                     |
| Macambini-Ward 2/2        | Bulk Line    | Res 02 UAPILEMAN07      | Mandeni            | R 237 798           |                     |
| Macambini-Ward 2/2        | Pumpstation  | Pump 01_UAPILEMAN07     | Mandeni            | R 2 391 825         |                     |
| Macambini-Ward 2/2        | Pumpstation  | Pump 02_UAPILEMAN07     | Mandeni            | R 2 391 825         |                     |
| Macambini-Ward 2/2        | Reticulation | RET_UAPILEMAN07         | Mandeni            | R 5 320 905         |                     |
| <b>Macambini-Ward 2/2</b> | <b>Total</b> |                         |                    |                     | <b>R 18 623 168</b> |
| Macambini-Ward 9          | Borehole     | Borehole 01 UAPILEMAN08 | Mandeni            | R 300 000           |                     |
| Macambini-Ward 9          | Borehole     | Borehole 02 UAPILEMAN08 | Mandeni            | R 300 000           |                     |
| Macambini-Ward 9          | Borehole     | Borehole 03 UAPILEMAN08 | Mandeni            | R 300 000           |                     |
| Macambini-Ward 9          | Borehole     | Borehole 04 UAPILEMAN08 | Mandeni            | R 300 000           |                     |

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| Scheme Name             | Type         | Name                    | Local Municipality | Infrastructure Cost | Total Cost         |
|-------------------------|--------------|-------------------------|--------------------|---------------------|--------------------|
| Macambini-Ward 9        | Reservoir    | Res UAPILEMAN08         | Mandeni            | R 2 197 636         |                    |
| Macambini-Ward 9        | Bulk Line    | Borehole 01 UAPILEMAN08 | Mandeni            | R 265 769           |                    |
| Macambini-Ward 9        | Bulk Line    | Borehole 02 UAPILEMAN08 | Mandeni            | R 658 480           |                    |
| Macambini-Ward 9        | Bulk Line    | Borehole 04 UAPILEMAN08 | Mandeni            | R 550 185           |                    |
| Macambini-Ward 9        | Bulk Line    | Borehole 03 UAPILEMAN08 | Mandeni            | R 784 748           |                    |
| Macambini-Ward 9        | Reticulation | RET_UAPILEMAN08         | Mandeni            | R 2 262 727         |                    |
| <b>Macambini-Ward 9</b> | <b>Total</b> |                         |                    |                     | <b>R 7 919 544</b> |
| Makhwanini-Ward 9       | Borehole     | Borehole 01 UAPILEMAN09 | Mandeni            | R 300 000           |                    |
| Makhwanini-Ward 9       | Borehole     | Borehole 02 UAPILEMAN09 | Mandeni            | R 300 000           |                    |
| Makhwanini-Ward 9       | Borehole     | Borehole 03 UAPILEMAN09 | Mandeni            | R 300 000           |                    |
| Makhwanini-Ward 9       | Borehole     | Borehole 04 UAPILEMAN09 | Mandeni            | R 300 000           |                    |
| Makhwanini-Ward 9       | Borehole     | Borehole 05 UAPILEMAN09 | Mandeni            | R 300 000           |                    |
| Makhwanini-Ward 9       | Borehole     | Borehole 06 UAPILEMAN09 | Mandeni            | R 300 000           |                    |
| Makhwanini-Ward 9       | Reservoir    | Res 01 UAPILEMAN09      | Mandeni            | R 2 677 374         |                    |
| Makhwanini-Ward 9       | Reservoir    | Res 02 UAPILEMAN09      | Mandeni            | R 2 677 374         |                    |
| Makhwanini-Ward 9       | Bulk Line    | Borehole 01 UAPILEMAN09 | Mandeni            | R 712 343           |                    |
| Makhwanini-Ward 9       | Bulk Line    | Borehole 02 UAPILEMAN09 | Mandeni            | R 662 561           |                    |
| Makhwanini-Ward 9       | Bulk Line    | Borehole 03 UAPILEMAN09 | Mandeni            | R 1 723 628         |                    |
| Makhwanini-Ward 9       | Bulk Line    | Borehole 04 UAPILEMAN09 | Mandeni            | R 1 684 637         |                    |
| Makhwanini-Ward 9       | Bulk Line    | Borehole 05 UAPILEMAN09 | Mandeni            | R 621 900           |                    |
| Makhwanini-Ward 9       | Bulk Line    | Borehole 06 UAPILEMAN09 | Mandeni            | R 839 682           |                    |
| Makhwanini-Ward 9       | Bulk Line    | Res 02 UAPILEMAN09      | Mandeni            | R 3 438 966         |                    |
| Makhwanini-Ward 9       | Pumpstation  | Pump_UAPILEMAN09        | Mandeni            | R 4 422 620         |                    |
| Makhwanini-Ward 9       | Reticulation | RET_UAPILEMAN09         | Mandeni            | R 8 504 434         |                    |

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| Scheme Name               | Type         | Name                    | Local Municipality | Infrastructure Cost | Total Cost          |
|---------------------------|--------------|-------------------------|--------------------|---------------------|---------------------|
| <b>Makhwanini-Ward 9</b>  | <b>Total</b> |                         |                    |                     | <b>R 29 765 518</b> |
| Macambini-Ward 8/1        | Borehole     | Borehole 02 UAPILEMAN10 | Mandeni            | R 300 000           |                     |
| Macambini-Ward 8/1        | Borehole     | Borehole 01 UAPILEMAN10 | Mandeni            | R 300 000           |                     |
| Macambini-Ward 8/1        | Borehole     | Borehole 03 UAPILEMAN10 | Mandeni            | R 300 000           |                     |
| Macambini-Ward 8/1        | Borehole     | Borehole 04 UAPILEMAN10 | Mandeni            | R 300 000           |                     |
| Macambini-Ward 8/1        | Reservoir    | Res 01 UAPILEMAN10      | Mandeni            | R 1 120 431         |                     |
| Macambini-Ward 8/1        | Reservoir    | Res 02 UAPILEMAN10      | Mandeni            | R 1 120 431         |                     |
| Macambini-Ward 8/1        | Bulk Line    | Borehole 01 UAPILEMAN10 | Mandeni            | R 379 582           |                     |
| Macambini-Ward 8/1        | Bulk Line    | Borehole 03 UAPILEMAN10 | Mandeni            | R 825 631           |                     |
| Macambini-Ward 8/1        | Bulk Line    | Borehole 02 UAPILEMAN10 | Mandeni            | R 223 993           |                     |
| Macambini-Ward 8/1        | Bulk Line    | Borehole 04 UAPILEMAN10 | Mandeni            | R 380 367           |                     |
| Macambini-Ward 8/1        | Bulk Line    | Res 01 UAPILEMAN10      | Mandeni            | R 460 845           |                     |
| Macambini-Ward 8/1        | Reticulation | RET_UAPILEMAN10         | Mandeni            | R 2 284 512         |                     |
| <b>Macambini-Ward 8/1</b> | <b>Total</b> |                         |                    |                     | <b>R 7 995 792</b>  |
| Macambini-Ward 8/2        | Reservoir    | Res 01 UAPILEMAN11      | Mandeni            | R 824 662           |                     |
| Macambini-Ward 8/2        | Reservoir    | Res 02 UAPILEMAN11      | Mandeni            | R 824 662           |                     |
| Macambini-Ward 8/2        | Reservoir    | Res 03 UAPILEMAN11      | Mandeni            | R 824 662           |                     |
| Macambini-Ward 8/2        | Bulk Line    | Pump_UAPILEMAN11        | Mandeni            | R 1 080 143         |                     |
| Macambini-Ward 8/2        | Bulk Line    | Gingingdlovu WTW        | Mandeni            | R 515 443           |                     |
| Macambini-Ward 8/2        | Bulk Line    | Gingingdlovu WTW        | Mandeni            | R 458 646           |                     |
| Macambini-Ward 8/2        | Bulk Line    | Gingingdlovu WTW        | Mandeni            | R 912 793           |                     |
| Macambini-Ward 8/2        | Pumpstation  | Pump_UAPILEMAN11        | Mandeni            | R 2 391 825         |                     |
| Macambini-Ward 8/2        | Reticulation | RET_UAPILEMAN11         | Mandeni            | R 3 133 134         |                     |
| <b>Macambini-Ward 8/2</b> | <b>Total</b> |                         |                    |                     | <b>R 10 965 970</b> |

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| Scheme Name                | Type              | Name                          | Local Municipality | Infrastructure Cost | Total Cost          |
|----------------------------|-------------------|-------------------------------|--------------------|---------------------|---------------------|
| Macambini-Ward 2/3         | River Abstraction | River Abstraction_UAPILEMAN12 | Mandeni            | R 300 000           |                     |
| Macambini-Ward 2/3         | Reservoir         | Res 02 UAPILEMAN12            | Mandeni            | R 567 752           |                     |
| Macambini-Ward 2/3         | Reservoir         | Res 03 UAPILEMAN12            | Mandeni            | R 567 752           |                     |
| Macambini-Ward 2/3         | Reservoir         | Res 07 UAPILEMAN12            | Mandeni            | R 567 752           |                     |
| Macambini-Ward 2/3         | Reservoir         | Res 05 UAPILEMAN12            | Mandeni            | R 567 752           |                     |
| Macambini-Ward 2/3         | Reservoir         | Res 04 UAPILEMAN12            | Mandeni            | R 567 752           |                     |
| Macambini-Ward 2/3         | Reservoir         | Res 01 UAPILEMAN12            | Mandeni            | R 567 752           |                     |
| Macambini-Ward 2/3         | Reservoir         | Res 06 UAPILEMAN12            | Mandeni            | R 2 197 636         |                     |
| Macambini-Ward 2/3         | Bulk Line         | RiverAbstraction_UAPILEMAN12  | Mandeni            | R 1 114 908         |                     |
| Macambini-Ward 2/3         | Bulk Line         | Res 01 UAPILEMAN12            | Mandeni            | R 117 241           |                     |
| Macambini-Ward 2/3         | Bulk Line         | Res 01 UAPILEMAN12            | Mandeni            | R 3 697 034         |                     |
| Macambini-Ward 2/3         | Bulk Line         | Res 01 UAPILEMAN12            | Mandeni            | R 197 589           |                     |
| Macambini-Ward 2/3         | Bulk Line         | Pump3_UAPILEMAN12             | Mandeni            | R 817 330           |                     |
| Macambini-Ward 2/3         | Bulk Line         | Res 01 UAPILEMAN12            | Mandeni            | R 374 110           |                     |
| Macambini-Ward 2/3         | Bulk Line         | Pump1_UAPILEMAN12             | Mandeni            | R 2 561 369         |                     |
| Macambini-Ward 2/3         | Pumpstation       | Pump1_UAPILEMAN12             | Mandeni            | R 1 315 181         |                     |
| Macambini-Ward 2/3         | Pumpstation       | Pump2_UAPILEMAN12             | Mandeni            | R 1 315 181         |                     |
| Macambini-Ward 2/3         | Pumpstation       | Pump3_UAPILEMAN12             | Mandeni            | R 1 315 181         |                     |
| Macambini-Ward 2/3         | Pumpstation       | Pump4_UAPILEMAN12             | Mandeni            | R 1 315 181         |                     |
| Macambini-Ward 2/3         | WTW               | Package Plant_UAPILEMAN12     | Mandeni            | R 1 400 000         |                     |
| Macambini-Ward 2/3         | Reticulation      | RET_UAPILEMAN12               | Mandeni            | R 8 577 781         |                     |
| <b>Macambini-Ward 2/3</b>  | <b>Total</b>      |                               |                    |                     | <b>R 30 022 232</b> |
| Emabomvini A-Ward 6        | Borehole          | Borehole UAPILEMAP01          | Maphumulo          | R 270 000           |                     |
| <b>Emabomvini A-Ward 6</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         |
|----------------------------|--------------|-------------------------|--------------------|---------------------|--------------------|
| Nyonebomvu-Ward 6/1        | Borehole     | Borehole UAPILEMAP02    | Maphumulo          | R 270 000           |                    |
| <b>Nyonebomvu-Ward 6/1</b> | <b>Total</b> |                         |                    |                     | <b>R 270 000</b>   |
| Vuma A-Ward 6/1            | Borehole     | Borehole 01 UAPILEMAP03 | Maphumulo          | R 270 000           |                    |
| Vuma A-Ward 6/1            | Borehole     | Borehole 02 UAPILEMAP03 | Maphumulo          | R 270 000           |                    |
| <b>Vuma A-Ward 6/1</b>     | <b>Total</b> |                         |                    |                     | <b>R 540 000</b>   |
| Vuma A-Ward 6/2            | Borehole     | Borehole UAPILEMAP04    | Maphumulo          | R 270 000           |                    |
| <b>Vuma A-Ward 6/2</b>     | <b>Total</b> |                         |                    |                     | <b>R 270 000</b>   |
| Ndukwende-Ward 5/1         | Borehole     | Borehole 01 UAPILEMAP05 | Maphumulo          | R 270 000           |                    |
| Ndukwende-Ward 5/1         | Borehole     | Borehole 02 UAPILEMAP05 | Maphumulo          | R 270 000           |                    |
| Ndukwende-Ward 5/1         | Borehole     | Borehole 03 UAPILEMAP05 | Maphumulo          | R 270 000           |                    |
| Ndukwende-Ward 5/1         | Borehole     | Borehole 04 UAPILEMAP05 | Maphumulo          | R 270 000           |                    |
| <b>Ndukwende-Ward 5/1</b>  | <b>Total</b> |                         |                    |                     | <b>R 1 080 000</b> |
| Emthombeni-Ward 5/1        | Borehole     | Borehole 01 UAPILEMAP06 | Maphumulo          | R 300 000           |                    |
| Emthombeni-Ward 5/1        | Borehole     | Borehole 02 UAPILEMAP06 | Maphumulo          | R 300 000           |                    |
| Emthombeni-Ward 5/1        | Borehole     | Borehole 03 UAPILEMAP06 | Maphumulo          | R 300 000           |                    |
| Emthombeni-Ward 5/1        | Borehole     | Borehole 04 UAPILEMAP06 | Maphumulo          | R 300 000           |                    |
| Emthombeni-Ward 5/1        | Reservoir    | Res 01 UAPILEMAP06      | Maphumulo          | R 1 419 164         |                    |
| Emthombeni-Ward 5/1        | Reservoir    | Res 02 UAPILEMAP06      | Maphumulo          | R 1 419 164         |                    |
| Emthombeni-Ward 5/1        | Reservoir    | Res 03 UAPILEMAP06      | Maphumulo          | R 1 419 164         |                    |
| Emthombeni-Ward 5/1        | Bulk Line    | Res 01 UAPILEMAP06      | Maphumulo          | R 1 350 111         |                    |
| Emthombeni-Ward 5/1        | Bulk Line    | Res 01 UAPILEMAP06      | Maphumulo          | R 778 498           |                    |
| Emthombeni-Ward 5/1        | Bulk Line    | Pump_UAPILEMAP06        | Maphumulo          | R 674 925           |                    |
| Emthombeni-Ward 5/1        | Bulk Line    | Borehole 01 UAPILEMAP06 | Maphumulo          | R 289 276           |                    |
| Emthombeni-Ward 5/1        | Bulk Line    | Borehole 03 UAPILEMAP06 | Maphumulo          | R 383 947           |                    |

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| Scheme Name                | Type         | Name                    | Local Municipality | Infrastructure Cost | Total Cost          |
|----------------------------|--------------|-------------------------|--------------------|---------------------|---------------------|
| Emthombeni-Ward 5/1        | Bulk Line    | Borehole 02 UAPILEMAP06 | Maphumulo          | R 497 813           |                     |
| Emthombeni-Ward 5/1        | Bulk Line    | Borehole 04 UAPILEMAP06 | Maphumulo          | R 1 182 116         |                     |
| Emthombeni-Ward 5/1        | Pumpstation  | Pump_UAPILEMAP06        | Maphumulo          | R 2 862 453         |                     |
| Emthombeni-Ward 5/1        | Reticulation | RET_UAPILEMAP06         | Maphumulo          | R 5 390 653         |                     |
| <b>Emthombeni-Ward 5/1</b> | <b>Total</b> |                         |                    |                     | <b>R 18 867 285</b> |
| Emthombeni-Ward 5/2        | Borehole     | Borehole 01 UAPILEMAP07 | Maphumulo          | R 270 000           |                     |
| Emthombeni-Ward 5/2        | Borehole     | Borehole 02 UAPILEMAP07 | Maphumulo          | R 270 000           |                     |
| <b>Emthombeni-Ward 5/2</b> | <b>Total</b> |                         |                    |                     | <b>R 540 000</b>    |
| Ndukwende-Ward 5/2         | Borehole     | Borehole 01 UAPILEMAP08 | Maphumulo          | R 300 000           |                     |
| Ndukwende-Ward 5/2         | Borehole     | Borehole 02 UAPILEMAP08 | Maphumulo          | R 300 000           |                     |
| Ndukwende-Ward 5/2         | Reservoir    | Res 01 UAPILEMAP08      | Maphumulo          | R 1 419 164         |                     |
| Ndukwende-Ward 5/2         | Reservoir    | Res 02 UAPILEMAP08      | Maphumulo          | R 1 419 164         |                     |
| Ndukwende-Ward 5/2         | Bulk Line    | Borehole 02 UAPILEMAP08 | Maphumulo          | R 528 577           |                     |
| Ndukwende-Ward 5/2         | Bulk Line    | Borehole 01 UAPILEMAP08 | Maphumulo          | R 327 594           |                     |
| Ndukwende-Ward 5/2         | Bulk Line    | Res 01 UAPILEMAP08      | Maphumulo          | R 965 134           |                     |
| Ndukwende-Ward 5/2         | Bulk Line    | Pump_UAPILEMAP08        | Maphumulo          | R 639 183           |                     |
| Ndukwende-Ward 5/2         | Pumpstation  | Pump_UAPILEMAP08        | Maphumulo          | R 2 862 453         |                     |
| Ndukwende-Ward 5/2         | Reticulation | RET_UAPILEMAP08         | Maphumulo          | R 3 504 508         |                     |
| <b>Ndukwende-Ward 5/2</b>  | <b>Total</b> |                         |                    |                     | <b>R 12 265 777</b> |
| Menyezwayo-Ward 5          | Borehole     | Borehole 01 UAPILEMAP09 | Maphumulo          | R 270 000           |                     |
| Menyezwayo-Ward 5          | Borehole     | Borehole 02 UAPILEMAP09 | Maphumulo          | R 270 000           |                     |
| <b>Menyezwayo-Ward 5</b>   | <b>Total</b> |                         |                    |                     | <b>R 540 000</b>    |
| Emthombeni-Ward 5/3        | Borehole     | Borehole 01 UAPILEMAP10 | Maphumulo          | R 300 000           |                     |
| Emthombeni-Ward 5/3        | Borehole     | Borehole 02 UAPILEMAP10 | Maphumulo          | R 300 000           |                     |

Development of UAP for Water & Sanitation in Kwazulu-Natal

| Scheme Name                | Type         | Name                    | Local Municipality | Infrastructure Cost | Total Cost         |
|----------------------------|--------------|-------------------------|--------------------|---------------------|--------------------|
| Emthombeni-Ward 5/3        | Borehole     | Borehole 03 UAPILEMAP10 | Maphumulo          | R 270 000           |                    |
| Emthombeni-Ward 5/3        | Borehole     | Borehole 04 UAPILEMAP10 | Maphumulo          | R 270 000           |                    |
| Emthombeni-Ward 5/3        | Borehole     | Borehole 05 UAPILEMAP10 | Maphumulo          | R 270 000           |                    |
| Emthombeni-Ward 5/3        | Borehole     | Borehole 06 UAPILEMAP10 | Maphumulo          | R 270 000           |                    |
| Emthombeni-Ward 5/3        | Borehole     | Borehole 07 UAPILEMAP10 | Maphumulo          | R 270 000           |                    |
| Emthombeni-Ward 5/3        | Reservoir    | Res UAPILEMAP10         | Maphumulo          | R 478 652           |                    |
| Emthombeni-Ward 5/3        | Bulk Line    | Borehole 01 UAPILEMAP10 | Maphumulo          | R 196 912           |                    |
| Emthombeni-Ward 5/3        | Bulk Line    | Borehole 02 UAPILEMAP10 | Maphumulo          | R 375 145           |                    |
| Emthombeni-Ward 5/3        | Reticulation | RET_UAPILEMAP10         | Maphumulo          | R 1 200 284         |                    |
| <b>Emthombeni-Ward 5/3</b> | <b>Total</b> |                         |                    |                     | <b>R 4 200 992</b> |
| Vuma A-Ward 6/3            | Borehole     | Borehole 01 UAPILEMAP11 | Maphumulo          | R 300 000           |                    |
| Vuma A-Ward 6/3            | Borehole     | Borehole 02 UAPILEMAP11 | Maphumulo          | R 300 000           |                    |
| Vuma A-Ward 6/3            | Borehole     | Borehole 03 UAPILEMAP11 | Maphumulo          | R 300 000           |                    |
| Vuma A-Ward 6/3            | Borehole     | Borehole 04 UAPILEMAP11 | Maphumulo          | R 300 000           |                    |
| Vuma A-Ward 6/3            | Reservoir    | Res 01 UAPILEMAP11      | Maphumulo          | R 386 386           |                    |
| Vuma A-Ward 6/3            | Reservoir    | Res 02 UAPILEMAP11      | Maphumulo          | R 386 386           |                    |
| Vuma A-Ward 6/3            | Bulk Line    | Borehole 02 UAPILEMAP11 | Maphumulo          | R 291 590           |                    |
| Vuma A-Ward 6/3            | Bulk Line    | Borehole 01 UAPILEMAP11 | Maphumulo          | R 216 018           |                    |
| Vuma A-Ward 6/3            | Bulk Line    | Borehole 04 UAPILEMAP11 | Maphumulo          | R 151 718           |                    |
| Vuma A-Ward 6/3            | Bulk Line    | Borehole 03 UAPILEMAP11 | Maphumulo          | R 257 641           |                    |
| Vuma A-Ward 6/3            | Bulk Line    | Res 01 UAPILEMAP11      | Maphumulo          | R 380 684           |                    |
| Vuma A-Ward 6/3            | Bulk Line    | Pump_UAPILEMAP11        | Maphumulo          | R 286 129           |                    |
| Vuma A-Ward 6/3            | Pumpstation  | Pump_UAPILEMAP11        | Maphumulo          | R 1 315 181         |                    |
| Vuma A-Ward 6/3            | Reticulation | RET_UAPILEMAP11         | Maphumulo          | R 1 948 693         |                    |

Development of UAP for Water & Sanitation in Kwazulu-Natal



| Scheme Name                | Type         | Name                    | Local Municipality | Infrastructure Cost | Total Cost         |
|----------------------------|--------------|-------------------------|--------------------|---------------------|--------------------|
| <b>Vuma A-Ward 6/3</b>     | <b>Total</b> |                         |                    |                     | <b>R 6 820 425</b> |
| Nyonebomvu-Ward 6/2        | Borehole     | Borehole 01 UAPILEMAP12 | Maphumulo          | R 300 000           |                    |
| Nyonebomvu-Ward 6/2        | Borehole     | Borehole 02 UAPILEMAP12 | Maphumulo          | R 300 000           |                    |
| Nyonebomvu-Ward 6/2        | Reservoir    | Res UAPILEMAP12         | Maphumulo          | R 432 519           |                    |
| Nyonebomvu-Ward 6/2        | Bulk Line    | Borehole 01 UAPILEMAP12 | Maphumulo          | R 250 008           |                    |
| Nyonebomvu-Ward 6/2        | Bulk Line    | Borehole 02 UAPILEMAP12 | Maphumulo          | R 214 249           |                    |
| Nyonebomvu-Ward 6/2        | Reticulation | RET_UAPILEMAP12         | Maphumulo          | R 598 710           |                    |
| <b>Nyonebomvu-Ward 6/2</b> | <b>Total</b> |                         |                    |                     | <b>R 2 095 486</b> |
| Menyezwayo-Ward 6          | Borehole     | Borehole 01 UAPILEMAP13 | Maphumulo          | R 300 000           |                    |
| Menyezwayo-Ward 6          | Borehole     | Borehole 02 UAPILEMAP13 | Maphumulo          | R 300 000           |                    |
| Menyezwayo-Ward 6          | Borehole     | Borehole 03 UAPILEMAP13 | Maphumulo          | R 300 000           |                    |
| Menyezwayo-Ward 6          | Reservoir    | Res 01 UAPILEMAP13      | Maphumulo          | R 386 386           |                    |
| Menyezwayo-Ward 6          | Reservoir    | Res 02 UAPILEMAP13      | Maphumulo          | R 386 386           |                    |
| Menyezwayo-Ward 6          | Bulk Line    | Borehole 02 UAPILEMAP13 | Maphumulo          | R 354 132           |                    |
| Menyezwayo-Ward 6          | Bulk Line    | Borehole 01 UAPILEMAP13 | Maphumulo          | R 119 961           |                    |
| Menyezwayo-Ward 6          | Bulk Line    | Borehole 03 UAPILEMAP13 | Maphumulo          | R 216 760           |                    |
| Menyezwayo-Ward 6          | Bulk Line    | Res 01 UAPILEMAP13      | Maphumulo          | R 1 044 568         |                    |
| Menyezwayo-Ward 6          | Bulk Line    | Pump_UAPILEMAP13        | Maphumulo          | R 771 001           |                    |
| Menyezwayo-Ward 6          | Pumpstation  | Pump_UAPILEMAP13        | Maphumulo          | R 1 315 181         |                    |
| Menyezwayo-Ward 6          | Reticulation | RET_UAPILEMAP13         | Maphumulo          | R 2 197 750         |                    |
| <b>Menyezwayo-Ward 6</b>   | <b>Total</b> |                         |                    |                     | <b>R 7 692 123</b> |
| Nyonebomvu-Ward 6/3        | Borehole     | Borehole 01 UAPILEMAP14 | Maphumulo          | R 300 000           |                    |
| Nyonebomvu-Ward 6/3        | Borehole     | Borehole 02 UAPILEMAP14 | Maphumulo          | R 300 000           |                    |
| Nyonebomvu-Ward 6/3        | Reservoir    | Res UAPILEMAP14         | Maphumulo          | R 478 652           |                    |

Development of UAP for Water & Sanitation in Kwazulu-Natal



| Scheme Name                | Type         | Name                    | Local Municipality | Infrastructure Cost | Total Cost         |
|----------------------------|--------------|-------------------------|--------------------|---------------------|--------------------|
| Nyonebomvu-Ward 6/3        | Bulk Line    | Borehole 01 UAPILEMAP14 | Maphumulo          | R 241 426           |                    |
| Nyonebomvu-Ward 6/3        | Bulk Line    | Borehole 02 UAPILEMAP14 | Maphumulo          | R 82 122            |                    |
| Nyonebomvu-Ward 6/3        | Reticulation | RET_UAPILEMAP14         | Maphumulo          | R 560 880           |                    |
| <b>Nyonebomvu-Ward 6/3</b> | <b>Total</b> |                         |                    |                     | <b>R 1 963 079</b> |
| Vuma A-Ward 6/4            | Borehole     | Borehole 01 UAPILEMAP15 | Maphumulo          | R 270 000           |                    |
| Vuma A-Ward 6/4            | Borehole     | Borehole 02 UAPILEMAP15 | Maphumulo          | R 270 000           |                    |
| <b>Vuma A-Ward 6/4</b>     | <b>Total</b> |                         |                    |                     | <b>R 540 000</b>   |
| Vuma A-Ward 6/5            | Borehole     | Borehole 01 UAPILEMAP16 | Maphumulo          | R 270 000           |                    |
| Vuma A-Ward 6/5            | Borehole     | Borehole 02 UAPILEMAP16 | Maphumulo          | R 270 000           |                    |
| Vuma A-Ward 6/5            | Borehole     | Borehole 03 UAPILEMAP16 | Maphumulo          | R 270 000           |                    |
| <b>Vuma A-Ward 6/5</b>     | <b>Total</b> |                         |                    |                     | <b>R 810 000</b>   |
| Hholweni-Ward 11           | Borehole     | Borehole 01 UAPILEMAP17 | Maphumulo          | R 300 000           |                    |
| Hholweni-Ward 11           | Borehole     | Borehole 02 UAPILEMAP17 | Maphumulo          | R 300 000           |                    |
| Hholweni-Ward 11           | Reservoir    | Res UAPILEMAP17         | Maphumulo          | R 656 852           |                    |
| Hholweni-Ward 11           | Bulk Line    | Borehole 01 UAPILEMAP17 | Maphumulo          | R 174 472           |                    |
| Hholweni-Ward 11           | Bulk Line    | Borehole 02 UAPILEMAP17 | Maphumulo          | R 330 182           |                    |
| Hholweni-Ward 11           | Reticulation | RET_UAPILEMAP17         | Maphumulo          | R 704 602           |                    |
| <b>Hholweni-Ward 11</b>    | <b>Total</b> |                         |                    |                     | <b>R 2 466 108</b> |
| Isthundu-Ward 11           | Borehole     | Borehole 01 UAPILEMAP18 | Maphumulo          | R 270 000           |                    |
| Isthundu-Ward 11           | Borehole     | Borehole 02 UAPILEMAP18 | Maphumulo          | R 270 000           |                    |
| Isthundu-Ward 11           | Borehole     | Borehole 03 UAPILEMAP18 | Maphumulo          | R 270 000           |                    |
| <b>Isthundu-Ward 11</b>    | <b>Total</b> |                         |                    |                     | <b>R 810 000</b>   |
| Emnyameni-Ward 11          | Borehole     | Borehole 01 UAPILEMAP19 | Maphumulo          | R 300 000           |                    |
| Emnyameni-Ward 11          | Borehole     | Borehole 02 UAPILEMAP19 | Maphumulo          | R 300 000           |                    |

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| Scheme Name              | Type         | Name                    | Local Municipality | Infrastructure Cost | Total Cost          |
|--------------------------|--------------|-------------------------|--------------------|---------------------|---------------------|
| Emnyameni-Ward 11        | Borehole     | Borehole 03 UAPILEMAP19 | Maphumulo          | R 300 000           |                     |
| Emnyameni-Ward 11        | Reservoir    | Res 01 UAPILEMAP19      | Maphumulo          | R 1 419 164         |                     |
| Emnyameni-Ward 11        | Reservoir    | Res 02 UAPILEMAP19      | Maphumulo          | R 1 419 164         |                     |
| Emnyameni-Ward 11        | Bulk Line    | Borehole 01 UAPILEMAP19 | Maphumulo          | R 441 215           |                     |
| Emnyameni-Ward 11        | Bulk Line    | Borehole 02 UAPILEMAP19 | Maphumulo          | R 460 380           |                     |
| Emnyameni-Ward 11        | Bulk Line    | Borehole 03 UAPILEMAP19 | Maphumulo          | R 537 868           |                     |
| Emnyameni-Ward 11        | Bulk Line    | Res 01 UAPILEMAP19      | Maphumulo          | R 1 489 595         |                     |
| Emnyameni-Ward 11        | Bulk Line    | Pump_UAPILEMAP19        | Maphumulo          | R 263 416           |                     |
| Emnyameni-Ward 11        | Pumpstation  | Pump_UAPILEMAP19        | Maphumulo          | R 2 862 453         |                     |
| Emnyameni-Ward 11        | Reticulation | RET_UAPILEMAP19         | Maphumulo          | R 3 917 303         |                     |
| <b>Emnyameni-Ward 11</b> | <b>Total</b> |                         |                    |                     | <b>R 13 710 559</b> |
| Ishowe-Ward 9            | Borehole     | Borehole 01 UAPILEMAP20 | Maphumulo          | R 300 000           |                     |
| Ishowe-Ward 9            | Borehole     | Borehole 02 UAPILEMAP20 | Maphumulo          | R 300 000           |                     |
| Ishowe-Ward 9            | Borehole     | Borehole 03 UAPILEMAP20 | Maphumulo          | R 300 000           |                     |
| Ishowe-Ward 9            | Borehole     | Borehole 04 UAPILEMAP20 | Maphumulo          | R 300 000           |                     |
| Ishowe-Ward 9            | Reservoir    | Res 01 UAPILEMAP20      | Maphumulo          | R 1 120 431         |                     |
| Ishowe-Ward 9            | Reservoir    | Res 02 UAPILEMAP20      | Maphumulo          | R 1 120 431         |                     |
| Ishowe-Ward 9            | Bulk Line    | Borehole 01 UAPILEMAP20 | Maphumulo          | R 411 772           |                     |
| Ishowe-Ward 9            | Bulk Line    | Borehole 02 UAPILEMAP20 | Maphumulo          | R 225 626           |                     |
| Ishowe-Ward 9            | Bulk Line    | Borehole 03 UAPILEMAP20 | Maphumulo          | R 262 759           |                     |
| Ishowe-Ward 9            | Bulk Line    | Borehole 04 UAPILEMAP20 | Maphumulo          | R 374 395           |                     |
| Ishowe-Ward 9            | Bulk Line    | Res 01 UAPILEMAP20      | Maphumulo          | R 896 826           |                     |
| Ishowe-Ward 9            | Reticulation | RET_UAPILEMAP20         | Maphumulo          | R 2 244 896         |                     |
| <b>Ishowe-Ward 9</b>     | <b>Total</b> |                         |                    |                     | <b>R 7 857 137</b>  |

Development of UAP for Water & Sanitation in Kwazulu-Natal



| Scheme Name            | Type         | Name                    | Local Municipality | Infrastructure Cost | Total Cost         |
|------------------------|--------------|-------------------------|--------------------|---------------------|--------------------|
| Embizeni-Ward 8        | Borehole     | Borehole 01 UAPILEMAP21 | Maphumulo          | R 300 000           |                    |
| Embizeni-Ward 8        | Borehole     | Borehole 02 UAPILEMAP21 | Maphumulo          | R 300 000           |                    |
| Embizeni-Ward 8        | Reservoir    | Res 01 UAPILEMAP21      | Maphumulo          | R 567 752           |                    |
| Embizeni-Ward 8        | Reservoir    | Res 02 UAPILEMAP21      | Maphumulo          | R 567 752           |                    |
| Embizeni-Ward 8        | Bulk Line    | Borehole 02 UAPILEMAP21 | Maphumulo          | R 672 076           |                    |
| Embizeni-Ward 8        | Bulk Line    | Borehole 01 UAPILEMAP21 | Maphumulo          | R 498 677           |                    |
| Embizeni-Ward 8        | Bulk Line    | Res 01 UAPILEMAP21      | Maphumulo          | R 643 513           |                    |
| Embizeni-Ward 8        | Pumpstation  | Pump_UAPILEMAP21        | Maphumulo          | R 1 315 181         |                    |
| Embizeni-Ward 8        | Reticulation | RET_UAPILEMAP21         | Maphumulo          | R 1 945 980         |                    |
| <b>Embizeni-Ward 8</b> | <b>Total</b> |                         |                    |                     | <b>R 6 810 932</b> |
| Umvoti-Ward 11         | Borehole     | Borehole 01 UAPILEMAP22 | Maphumulo          | R 300 000           |                    |
| Umvoti-Ward 11         | Borehole     | Borehole 02 UAPILEMAP22 | Maphumulo          | R 300 000           |                    |
| Umvoti-Ward 11         | Borehole     | Borehole 03 UAPILEMAP22 | Maphumulo          | R 300 000           |                    |
| Umvoti-Ward 11         | Borehole     | Borehole 04 UAPILEMAP22 | Maphumulo          | R 300 000           |                    |
| Umvoti-Ward 11         | Reservoir    | Res UAPILEMAP22         | Maphumulo          | R 1 419 164         |                    |
| Umvoti-Ward 11         | Bulk Line    | Borehole 02 UAPILEMAP22 | Maphumulo          | R 370 361           |                    |
| Umvoti-Ward 11         | Bulk Line    | Borehole 01 UAPILEMAP22 | Maphumulo          | R 507 226           |                    |
| Umvoti-Ward 11         | Bulk Line    | Borehole 03 UAPILEMAP22 | Maphumulo          | R 288 727           |                    |
| Umvoti-Ward 11         | Bulk Line    | Borehole 04 UAPILEMAP22 | Maphumulo          | R 159 527           |                    |
| Umvoti-Ward 11         | Reticulation | RET_UAPILEMAP22         | Maphumulo          | R 1 578 002         |                    |
| <b>Umvoti-Ward 11</b>  | <b>Total</b> |                         |                    |                     | <b>R 5 523 007</b> |
| Amafahla-Ward 8        | Borehole     | Borehole 01 UAPILEMAP23 | Maphumulo          | R 300 000           |                    |
| Amafahla-Ward 8        | Borehole     | Borehole 02 UAPILEMAP23 | Maphumulo          | R 300 000           |                    |
| Amafahla-Ward 8        | Reservoir    | Res UAPILEMAP23         | Maphumulo          | R 567 752           |                    |

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| Scheme Name              | Type         | Name                       | Local Municipality | Infrastructure Cost | Total Cost         |
|--------------------------|--------------|----------------------------|--------------------|---------------------|--------------------|
| Amafahla-Ward 8          | Bulk Line    | Borehole 01 UAPILEMAP23    | Maphumulo          | R 231 622           |                    |
| Amafahla-Ward 8          | Bulk Line    | Borehole 02 UAPILEMAP23    | Maphumulo          | R 249 818           |                    |
| Amafahla-Ward 8          | Reticulation | RET_UAPILEMAP23            | Maphumulo          | R 659 677           |                    |
| <b>Amafahla-Ward 8</b>   | <b>Total</b> |                            |                    |                     | <b>R 2 308 868</b> |
| Mvozana-Ward 8           | Reservoir    | Res 01 UAPILEMAP24_Upgrade | Maphumulo          | R 1 419 164         |                    |
| Mvozana-Ward 8           | Reservoir    | Res 02 UAPILEMAP24_Upgrade | Maphumulo          | R 567 752           |                    |
| Mvozana-Ward 8           | Bulk Line    | Res UAPILEMAP24_Upgrade    | Maphumulo          | R 71 949            |                    |
| Mvozana-Ward 8           | Reticulation | RET_UAPILEMAP24_Upgrade    | Maphumulo          | R 823 546           |                    |
| <b>Mvozana-Ward 8</b>    | <b>Total</b> |                            |                    |                     | <b>R 2 882 411</b> |
| Vuma A-Ward 6/6          | Borehole     | Borehole 01 UAPILEMAP25    | Maphumulo          | R 270 000           |                    |
| Vuma A-Ward 6/6          | Borehole     | Borehole 01 UAPILEMAP25    | Maphumulo          | R 270 000           |                    |
| Vuma A-Ward 6/6          | Borehole     | Borehole 01 UAPILEMAP25    | Maphumulo          | R 270 000           |                    |
| Vuma A-Ward 6/6          | Borehole     | Borehole 01 UAPILEMAP25    | Maphumulo          | R 270 000           |                    |
| Vuma A-Ward 6/6          | Borehole     | Borehole 01 UAPILEMAP25    | Maphumulo          | R 270 000           |                    |
| Vuma A-Ward 6/6          | Borehole     | Borehole 01 UAPILEMAP25    | Maphumulo          | R 270 000           |                    |
| Vuma A-Ward 6/6          | Reticulation | RET_UAPILEMAP25            | Maphumulo          | R 648 000           |                    |
| <b>Vuma A-Ward 6/6</b>   | <b>Total</b> |                            |                    |                     | <b>R 2 268 000</b> |
| Ndwedwe NU-Ward 1        | Borehole     | Borehole 01 UAPNDW01       | Ndwedwe            | R 300 000           |                    |
| Ndwedwe NU-Ward 1        | Borehole     | Borehole 02 UAPNDW01       | Ndwedwe            | R 300 000           |                    |
| Ndwedwe NU-Ward 1        | Reservoir    | Res 01 UAPNDW01            | Ndwedwe            | R 3 089 419         |                    |
| Ndwedwe NU-Ward 1        | Bulk Line    | Borehole 01 UAPNDW01       | Ndwedwe            | R 715 354           |                    |
| Ndwedwe NU-Ward 1        | Bulk Line    | Borehole 02 UAPNDW01       | Ndwedwe            | R 468 884           |                    |
| Ndwedwe NU-Ward 1        | Reticulation | RET_UAPNDW01               | Ndwedwe            | R 1 949 463         |                    |
| <b>Ndwedwe NU-Ward 1</b> | <b>Total</b> |                            |                    |                     | <b>R 6 823 121</b> |



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| Scheme Name                     | Type         | Name                  | Local Municipality | Infrastructure Cost | Total Cost          |
|---------------------------------|--------------|-----------------------|--------------------|---------------------|---------------------|
| Sigedleni-Ward 4/1              | Borehole     | Borehole 01 UAPNDW02  | Ndwedwe            | R 270 000           |                     |
| Sigedleni-Ward 4/1              | Borehole     | Borehole 02 UAPNDW02  | Ndwedwe            | R 270 000           |                     |
| <b>Sigedleni-Ward 4/1</b>       | <b>Total</b> |                       |                    |                     | <b>R 540 000</b>    |
| Zimpondweni-Ward 17             | Borehole     | Borehole 01 UAPNDW03  | Ndwedwe            | R 300 000           |                     |
| Zimpondweni-Ward 17             | Borehole     | Borehole 02 UAPNDW03  | Ndwedwe            | R 300 000           |                     |
| Zimpondweni-Ward 17             | Borehole     | Borehole 03 UAPNDW03  | Ndwedwe            | R 300 000           |                     |
| Zimpondweni-Ward 17             | Borehole     | Borehole 04 UAPNDW03  | Ndwedwe            | R 300 000           |                     |
| Zimpondweni-Ward 17             | Reservoir    | Res 01 UAPNDW03       | Ndwedwe            | R 2 197 636         |                     |
| Zimpondweni-Ward 17             | Reservoir    | Res 02 UAPNDW03       | Ndwedwe            | R 2 197 636         |                     |
| Zimpondweni-Ward 17             | Reservoir    | Existing Reservoir    | Ndwedwe            | R 2 197 636         |                     |
| Zimpondweni-Ward 17             | Reservoir    | Existing Reservoir    | Ndwedwe            | R 2 197 636         |                     |
| Zimpondweni-Ward 17             | Bulk Line    | Borehole 01 UAPNDW03  | Ndwedwe            | R 157 565           |                     |
| Zimpondweni-Ward 17             | Bulk Line    | Borehole 02 UAPNDW03  | Ndwedwe            | R 218 693           |                     |
| Zimpondweni-Ward 17             | Bulk Line    | Reservoir 01 UAPNDW03 | Ndwedwe            | R 1 888 247         |                     |
| Zimpondweni-Ward 17             | Bulk Line    | Reservoir 02 UAPNDW03 | Ndwedwe            | R 2 462 816         |                     |
| Zimpondweni-Ward 17             | Bulk Line    | Borehole 03 UAPNDW03  | Ndwedwe            | R 104 730           |                     |
| Zimpondweni-Ward 17             | Bulk Line    | Borehole 04 UAPNDW03  | Ndwedwe            | R 84 134            |                     |
| Zimpondweni-Ward 17             | Pumpstation  | Pump01_UAPNDW03       | Ndwedwe            | R 4 422 620         |                     |
| Zimpondweni-Ward 17             | Pumpstation  | Pump02_UAPNDW03       | Ndwedwe            | R 4 422 620         |                     |
| Zimpondweni-Ward 17             | Reticulation | RET_UAPNDW03          | Ndwedwe            | R 9 500 787         |                     |
| <b>Zimpondweni-Ward 17</b>      | <b>Total</b> |                       |                    |                     | <b>R 33 252 753</b> |
| Sitshikitselweni-Ward 16        | Borehole     | Borehole 01 UAPNDW04  | Ndwedwe            | R 270 000           |                     |
| <b>Sitshikitselweni-Ward 16</b> | <b>Total</b> |                       |                    |                     | <b>R 270 000</b>    |
| Mahlabathini-Ward 16            | Borehole     | Borehole 01 UAPNDW05  | Ndwedwe            | R 300 000           |                     |

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| Scheme Name                 | Type              | Name                     | Local Municipality | Infrastructure Cost | Total Cost         |
|-----------------------------|-------------------|--------------------------|--------------------|---------------------|--------------------|
| Mahlabathini-Ward 16        | Borehole          | Borehole 04 UAPNDW05     | Ndwedwe            | R 300 000           |                    |
| Mahlabathini-Ward 16        | Borehole          | Borehole 02 UAPNDW05     | Ndwedwe            | R 300 000           |                    |
| Mahlabathini-Ward 16        | Borehole          | Borehole 03 UAPNDW05     | Ndwedwe            | R 300 000           |                    |
| Mahlabathini-Ward 16        | Reservoir         | Res 02 UAPNDW05          | Ndwedwe            | R 1 120 431         |                    |
| Mahlabathini-Ward 16        | Reservoir         | Res 01 UAPNDW05          | Ndwedwe            | R 1 120 431         |                    |
| Mahlabathini-Ward 16        | Bulk Line         | Borehole 01 UAPNDW05     | Ndwedwe            | R 128 565           |                    |
| Mahlabathini-Ward 16        | Bulk Line         | Borehole 02 UAPNDW05     | Ndwedwe            | R 110 606           |                    |
| Mahlabathini-Ward 16        | Bulk Line         | Borehole 03 UAPNDW05     | Ndwedwe            | R 212 718           |                    |
| Mahlabathini-Ward 16        | Bulk Line         | Borehole 04 UAPNDW05     | Ndwedwe            | R 139 784           |                    |
| Mahlabathini-Ward 16        | Reticulation      | RET_UAPNDW05             | Ndwedwe            | R 1 613 015         |                    |
| <b>Mahlabathini-Ward 16</b> | <b>Total</b>      |                          |                    |                     | <b>R 5 645 551</b> |
| Ofantwini-Ward 16           | Borehole          | Borehole 01 UAPNDW06     | Ndwedwe            | R 300 000           |                    |
| Ofantwini-Ward 16           | Reservoir         | Res 01 UAPNDW06          | Ndwedwe            | R 740 757           |                    |
| Ofantwini-Ward 16           | Bulk Line         | Borehole 01 UAPNDW06     | Ndwedwe            | R 246 897           |                    |
| Ofantwini-Ward 16           | Reticulation      | RET_UAPNDW06             | Ndwedwe            | R 515 062           |                    |
| <b>Ofantwini-Ward 16</b>    | <b>Total</b>      |                          |                    |                     | <b>R 1 802 715</b> |
| Msilili-Ward 16             | Borehole          | Borehole 01 UAPNDW07     | Ndwedwe            | R 300 000           |                    |
| Msilili-Ward 16             | Borehole          | Borehole 02 UAPNDW07     | Ndwedwe            | R 300 000           |                    |
| Msilili-Ward 16             | Reservoir         | Res 01 UAPNDW07          | Ndwedwe            | R 2 197 636         |                    |
| Msilili-Ward 16             | Bulk Line         | Borehole 02 UAPNDW07     | Ndwedwe            | R 89 918            |                    |
| Msilili-Ward 16             | Bulk Line         | Borehole 01 UAPNDW07     | Ndwedwe            | R 56 277            |                    |
| Msilili-Ward 16             | Reticulation      | RET_UAPNDW07             | Ndwedwe            | R 1 177 532         |                    |
| <b>Msilili-Ward 16</b>      | <b>Total</b>      |                          |                    |                     | <b>R 4 121 363</b> |
| Ezingaganeni-Ward 27        | River abstraction | Umvoti River 01 UAPNDW08 | Ndwedwe            | R 300 000           |                    |

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| Scheme Name                         | Type         | Name                     | Local Municipality | Infrastructure Cost | Total Cost           |
|-------------------------------------|--------------|--------------------------|--------------------|---------------------|----------------------|
| Ezingaganeni-Ward 27                | Reservoir    | Res 01 UAPNDW08          | Ndwedwe            | R 1 120 431         |                      |
| Ezingaganeni-Ward 27                | Bulk Line    | Umvoti River 01 UAPNDW08 | Ndwedwe            | R 395 422           |                      |
| Ezingaganeni-Ward 27                | Pumpstation  | Pump01_UAPNDW08          | Ndwedwe            | R 2 391 825         |                      |
| Ezingaganeni-Ward 27                | Reticulation | RET_UAPNDW08             | Ndwedwe            | R 1 683 071         |                      |
| <b>Ezingaganeni-Ward 27</b>         | <b>Total</b> |                          |                    |                     | <b>R 5 890 750</b>   |
| Tucrose-Ward 1                      | Borehole     | Borehole 01 UAPNDW09     | Ndwedwe            | R 270 000           |                      |
| Tucrose-Ward 1                      | Borehole     | Borehole 02 UAPNDW09     | Ndwedwe            | R 270 000           |                      |
| <b>Tucrose-Ward 1</b>               | <b>Total</b> |                          |                    |                     | <b>R 540 000</b>     |
| Doringkop-Ward 1                    | Reservoir    | Res 01 UAPNDW10          | Ndwedwe            | R 656 852           |                      |
| Doringkop-Ward 1                    | Bulk Line    | Borehole 01 UAPNDW10     | Ndwedwe            | R 92 346            |                      |
| Doringkop-Ward 1                    | Borehole     | Borehole 01 UAPNDW10     | Ndwedwe            | R 300 000           |                      |
| Doringkop-Ward 1                    | Reticulation | RET_UAPNDW10             | Ndwedwe            | R 419 679           |                      |
| <b>Doringkop-Ward 1</b>             | <b>Total</b> |                          |                    |                     | <b>R 1 468 877</b>   |
| KwaNyuswa-Ward 2                    | Borehole     | Borehole 01 UAPNDW11     | Ndwedwe            | R 270 000           |                      |
| <b>KwaNyuswa-Ward 2</b>             | <b>Total</b> |                          |                    |                     | <b>R 270 000</b>     |
| Sigedleni-Ward 4/2                  | Reservoir    | Res 01 UAPNDW12          | Ndwedwe            | R 478 652           |                      |
| Sigedleni-Ward 4/2                  | Bulk Line    | Borehole 01 UAPNDW12     | Ndwedwe            | R 103 893           |                      |
| Sigedleni-Ward 4/2                  | Bulk Line    | Borehole 02 UAPNDW12     | Ndwedwe            | R 138 399           |                      |
| Sigedleni-Ward 4/2                  | Borehole     | Borehole 02 UAPNDW12     | Ndwedwe            | R 300 000           |                      |
| Sigedleni-Ward 4/2                  | Borehole     | Borehole 01 UAPNDW12     | Ndwedwe            | R 300 000           |                      |
| Sigedleni-Ward 4/2                  | Reticulation | RET_UAPNDW12             | Ndwedwe            | R 528 378           |                      |
| <b>Sigedleni-Ward 4/2</b>           | <b>Total</b> |                          |                    |                     | <b>R 1 849 321</b>   |
| <b>ILEMBE UNIVERSAL ACCESS PLAN</b> |              |                          |                    |                     | <b>R 307 259 744</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 iLembe:

- 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 northern areas of Mandeni seem to rely on water supply from uThungulu. There is infrastructure in place however, not enough water is pumped through to these areas to supply this particular area with water. Bulk schemes within this area should either be upgraded, or new schemes should be put in place so as to enable water supply to these areas.
- The GIS data that was provided by the district was inaccurate. Boreholes indicated by iLembe GIS data were apparently either out dated or incorrect as confirmed by iLembe Technical Managers. It is recommended that a complete audit of current water and sanitation related assets is conducted so as to ensure more accurate costing and facility management in the future. 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.
- 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.
- There are none functional and dried up boreholes within this region. In these particular areas water tankers are used to supply water. Regular maintenance of borehole supply sources or new boreholes should be taken into consideration so as to ensure a stable supply of water to JoJo tanks. If the location of new boreholes is not an option then these areas should be connected to a nearby scheme for water supply.
- Water Service Master Plan must be updated to reflect the current backlog and solutions to how these will be addressed in the future. This was last updated in August 2007 by Jeffares & Green Consulting Engineers using the backlog information supplied by UWP Consulting Engineers. Population figures have grown in some LM's and reduced in others due to urbanisation. Also, with the increasing growth of the Dube Trade Port the requirements for basic services will have to be increased and upgraded.

- 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.
- Formulate a data collection process to ensure reliable base data for strategic planning purposes;
- Water and sanitation services backlogs needs review 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, iLembe should also prioritise the maintenance of the existing infrastructure by introducing an asset management programme with appropriate budget.
- 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.
- Regional schemes identified by iLembe must be finalised in order to understand what are the overall costs to construct these schemes and how will this address the long term backlogs and upgrades to existing infrastructure.
- Cross border schemes must also be considered in order to address some of the outline areas but must be sustainable.
- Potential dam sites site must also be investigated as iLembe solely depends on water from outside of the district municipality. The development of bulk water sources within the district, especially dams, must be considered. The Uthukela River is the only river that seems variable as a Regional Bulk Water Source to serve KwaDukuza and Mandeni Municipalities but it is also constrained by upstream abstractions that limit the amount of water that can be used by the district municipality.
- Areas of KwaDukuza and Mandeni are rapidly urbanising with increasing demands on current infrastructure and the informal areas like Groutville in Kwadukusa that are have basic levels of services (VIP's) . These areas require Water-Bourne sanitation not only due to increasing densities but also due to the ground water protocols which indicate a high water table.

- 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. ILembe 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.

ILembe lacks sources of raw water such as dams and relies on cross border supply from uThungulu. Hence it is important that future dam sites be investigated so that iLembe could source water from these potential dams and become sustainable and not depend on other municipalities.

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.

ILembe 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 iLembe 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

### iLembe District Municipality

### DWA Priority Actions Plans

| PRJNR (MWIG Project Number) | Project Origin | LM        | Project Name                                | Project Description                         | Project Status | Type of Intervention  | Total Project Cost | Short Term Actions | Short Term Fund Requirement | Medium Term Actions | Medium Term Funding Requirement | Long Term Actions | Long Term Funding Requirement |
|-----------------------------|----------------|-----------|---|---|----------------|---|--------------------|--------------------|-----------------------------|---------------------|---------------------------------|-------------------|-------------------------------|
| 2011MIGFDC29202535          | MIG            | Maphumulo | Balocom/KwaSizabantu Water Supply Project   | Balocom/KwaSizabantu Water Supply Project   | Design         | -   | 168 242 758        | Tender             | -                           | Construction        | -                               | -                 | -                             |
| 2006MIGFDC29151895          | MIG            | Mandeni   | Macambini Water Supply Project              | Macambini Water Supply Project              | Construction   | -   | 101 076 781        | Tender             | -                           | Construction        | -                               | -                 | -                             |
| 2008MIGFDC29156044          | MIG            | Maphumulo | Ngcebo/KwaDukuza Regional Bulk Water Scheme | Ngcebo/KwaDukuza Regional Bulk Water Scheme | Construction   | -   | 339 870 403        | Tender             | -                           | Construction        | -                               | -                 | -                             |
| 2007MIGFDC29155285          | MIG            | Mandeni   | Ndulinde Water Supply Project               | Ndulinde Water Supply Project               | Construction   | -   | 116 579 000        | Tender             | -                           | Construction        | -                               | -                 | -                             |
| ZKZNIL11                    | Other          | Maphumulo | Balocom/KwaSizabantu Water Supply Project   | Balocom/KwaSizabantu Water Supply Project   | Design         | Funding to be used to accelerate the implementation of the project. Bring follow-up phasing forward with MWIG funding | 70 000 000         | Tender             | 1 050 000                   | Construction        | 17 237 500                      | Construction      | 25 856 250                    |
| ZKZNIL12                    | Other          | Mandeni   | Macambini Water Supply Project              | Macambini Water Supply Project              | Construction   | Funding to be used to accelerate the implementation of the project. Bring follow-up phasing forward with MWIG funding | 80 000 000         | Tender             | 1 200 000                   | Construction        | 19 700 000                      | Construction      | 29 550 000                    |
| ZKZNIL15                    | Other          | Maphumulo | Ngcebo/KwaDukuza Regional Bulk Water Scheme | Ngcebo/KwaDukuza Regional Bulk Water Scheme | Construction   | Funding to be used to accelerate the implementation of the project. Bring follow-up phasing forward with MWIG funding | 55 000 000         | Tender             | 825 000                     | Construction        | 13 543 750                      | Construction      | 20 315 625                    |

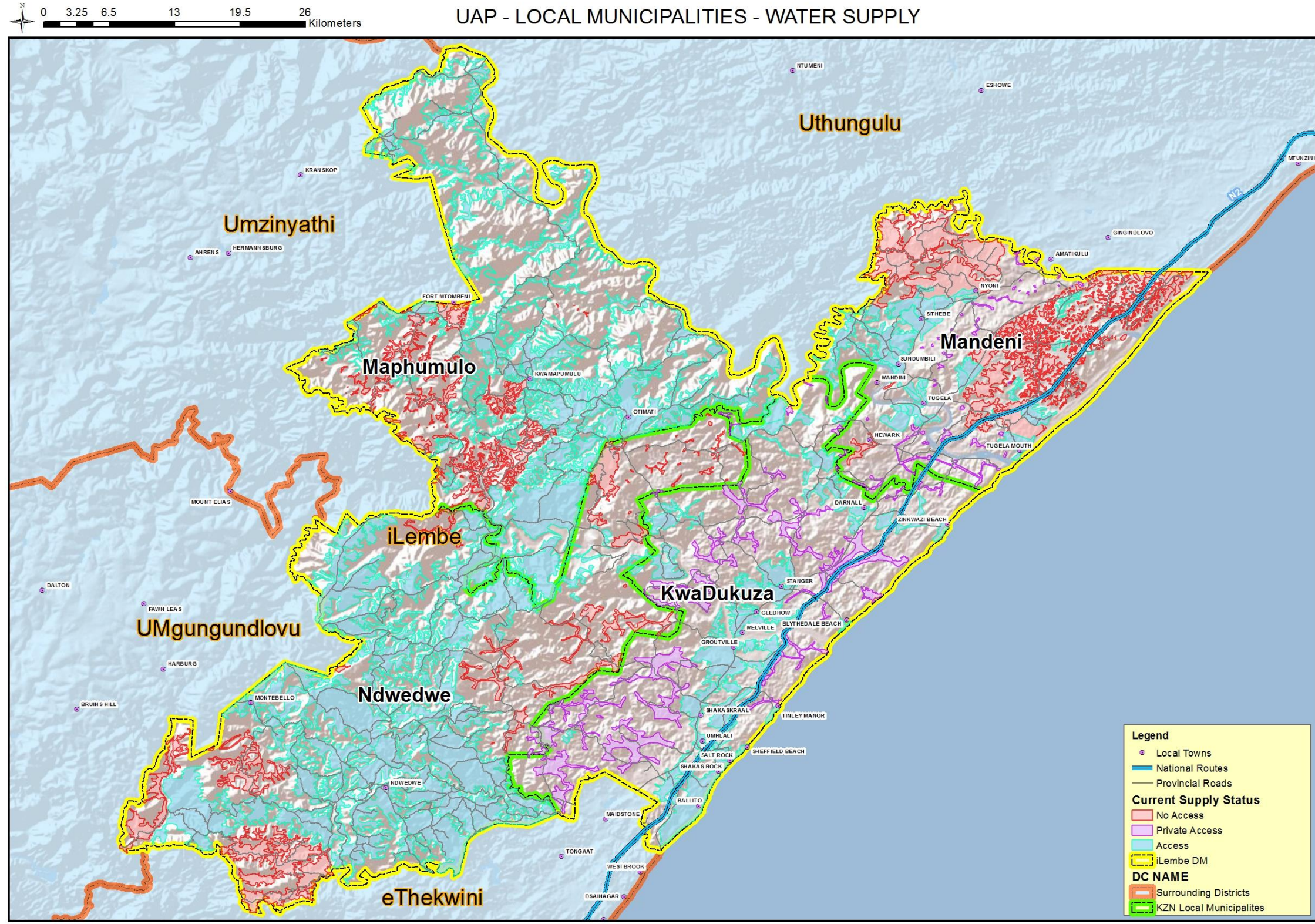
| PRJNR (MWIG Project Number) | Project Origin | LM        | Project Name  | Project Description                                  | Project Status | Type of Intervention  | Total Project Cost | Short Term Actions | Short Term Fund Requirement | Medium Term Actions   | Medium Term Funding | Long Term Actions | Long Term Funding Requirement |
|-----------------------------|----------------|-----------|---|--|----------------|---|--------------------|--------------------|-----------------------------|-----------------------|---------------------|-------------------|-------------------------------|
| ZKZNIL14                    | Other          | KwaDukuza | Mgigimbe (Ward 9 KwaDukuza) Community Water Supply Scheme | Mgigimbe (Ward 9 KwaDukuza) Community Water Supply   | Planning       | Funding to be used to accelerate the implementation of the project. Bring follow-up phasing forward with MWIG funding | 10 000 000         | Design & Tender    | 450 000                     | Construction          | 7 162 500           | -                 | 1 193 750                     |
| ZKZNIL13                    | Other          | Mandeni   | Ndulinde Water Supply Project                             | Ndulinde Water Supply Project                        | Construction   | Funding to be used to accelerate the implementation of the project. Bring follow-up phasing forward with MWIG funding | 50 000 000         | Tender             | 750 000                     | Construction          | 12 312 500          | Construction      | 18 468 750                    |
| ZKZNIL04                    | 23DM           | Ndwedwe   | Msilile Phase 2   | Msilile Phase 2                                      | Planning       | Required MWIG funding   | 35 000 000         | Design & Tender    | 1 575 000                   | Construction          | 8 356 250           | Construction      | 12 534 375                    |
| ZKZNIL17                    | Other          | Maphumulo | KwaNyamazane (Ward 4 Maphumulo) Water Supply Project      | KwaNyamazane (Ward 4 Maphumulo) Water Supply Project | Conceptual     | Funding   | 5 000 000          | Planning & Design  | 75 000                      | Tender & Construction | 4 725 000           | -                 | -                             |
| ZKZNIL03                    | 23DM           | KwaDukuza | Lower Tugela Bulk Water Supply Project                    | Lower Tugela bulk Water Supply Off-takes             | Planning       | MWIG funding:<br>2013/14 R80 mil<br>2014/15 R38 mil<br>2016 onwards R463 mil  | 581 000 000        | Design & Tender    | 5 810 000                   | Construction          | 30 793 000          | Construction      | 54 439 700                    |

| PRJNR (MWIG Project Number) | Project Origin | LM        | Project Name   | Project Description   | Project Status | Type of Intervention   | Total Project Cost | Short Term Actions | Short Term Fund Requirement | Medium Term Actions | Medium Term Funding | Long Term Actions | Long Term Funding Requirement |
|-----------------------------|----------------|-----------|--|---|----------------|--|--------------------|--------------------|-----------------------------|---------------------|---------------------|-------------------|-------------------------------|
| ZKZNIL01                    | 23DM           | All       | District Wide WCDM   | Ilembe District Wide WCDM   | Planning       | Leak detection and repair programme in terms of completed BP                         | 500 000 000        | Design & Tender    | 9 000 000                   | Construction        | 19 966 667          | Construction      | 31 402 222                    |
| ZKZNIL05                    | 23DM           | Maphumulo | Masibambisane Scheme Refurbishment   | Masibambisane Scheme Refurbishment  | Planning       | Funding for refurbishment and upgrade.   | 10 000 000         | Design & Tender    | 450 000                     | Construction        | 2 387 500           | Construction      | 3 581 250                     |
| ZKZNIL06                    | 23DM           | Ndwedwe   | Sonkombo (Ward 11 Ndwedwe LM) Refurbishment and Upgrade                                      | Sonkombo (Ward 11 Ndwedwe LM) Refurbishment and upgrade   | Planning       | Funding for refurbishment and upgrade.   | 5 000 000          | Design & Tender    | 225 000                     | Construction        | 3 581 250           | Construction      | 596 875                       |
| ZKZNIL07                    | 23DM           | Ndwedwe   | Esidumbini (Ward 4 Ndwedwe LM) Augmentation and Upgrade                                      | Esidumbini (Ward 4 Ndwedwe LM) Augmentation and Upgrade   | Planning       | Funding for bulk water augmentation, refurbishment and upgrade.                      | 10 000 000         | Design & Tender    | 450 000                     | Construction        | 7 162 500           | Construction      | 1 193 750                     |
| ZKZNIL08                    | 23DM           | Mandeni   | Masomonco (Mandeni Ward 10) Bulk Rising Main and Reservoir Upgrade & Refurbishment           | Masomonco (Mandeni Ward 10) Bulk rising Main and Reservoir Upgrade and refurbishment                                | Planning       | Upgrade of the bulk rising main and storage reservoir and fixing leaks.              | 8 000 000          | Design & Tender    | 360 000                     | Construction        | 5 730 000           | Construction      | 955 000                       |
| ZKZNIL09                    | Other          | KwaDukuza | Dorinkop/Mdlebeni (Ward 1 and 27 of KwaDukuza LM) Bulk Water Augmentation and Rehabilitation | Dorinkop/Mdlebeni (Ward 1 and 27 of KwaDukuza LM) Bulk Water Augmentation and rehabilitation of reticulation system | Planning       | Augmentation of the bulk water supply and rehabilitation of the reticulation system. | 20 000 000         | Design & Tender    | 900 000                     | Construction        | 14 325 000          | Construction      | 2 387 500                     |
| ZKZNIL10                    | Other          | KwaDukuza | Groutville – Aldenville Area (Ward 10 KwaDuKuza)   | Groutville – Aldenville Area (Ward 10 KwaDuKuza) New feed from Lower Tugela Scheme to address pressure problems     | Planning       | Solving low pressure problem and assuring sustainability of supply.                  | 15 000 000         | Design & Tender    | 675 000                     | Construction        | 10 743 750          | Construction      | 1 790 625                     |
| ZKZNIL02                    | 23DM           | KwaDukuza | Groutville Bulk Water and Sanitation   | Groutville Bulk Water and Sanitation to Housing Project   | Planning       | Water supply to Groutville Housing Projects.   | 60 000 000         | Design & Tender    | 2 700 000                   | Construction        | 14 325 000          | Construction      | 21 487 500                    |

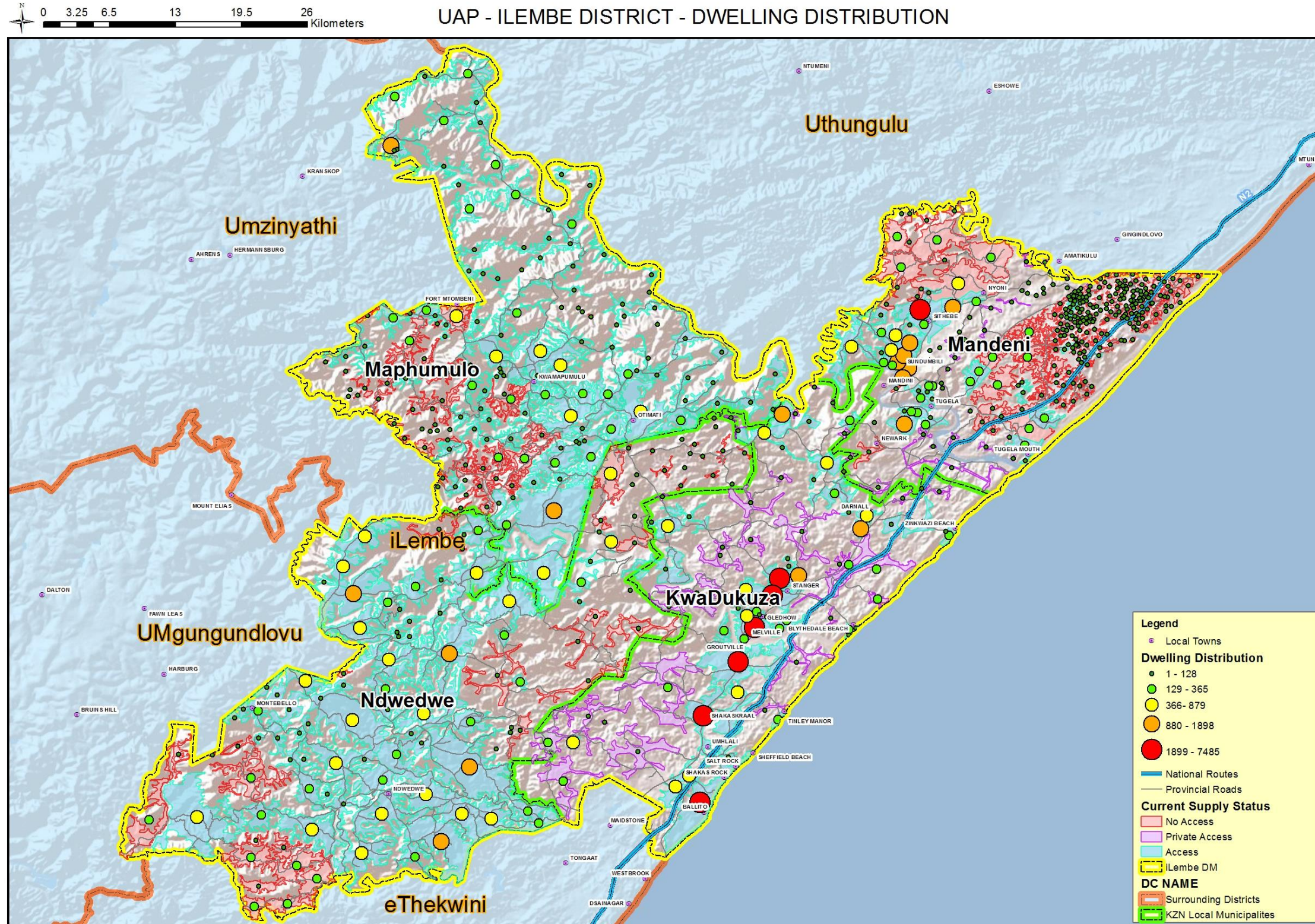
| PRJNR (MWIG Project Number) | Project Origin | LM        | Project Name   | Project Description  | Project Status | Type of Intervention  | Total Project Cost   | Short Term Actions | Short Term Fund Requirement | Medium Term Actions | Medium Term Funding | Long Term Actions | Long Term Funding Requirement |
|-----------------------------|----------------|-----------|--|--|----------------|---|----------------------|--------------------|-----------------------------|---------------------|---------------------|-------------------|-------------------------------|
| ZKZNIL19                    | Other          | Ndwedwe   | Ozwothini/Umshwathi 2 and 3 (Ward 2, 4,5, 6 and 9 Ndwedwe LM) Surface Water Supply | Ozwothini/Umshwathi 2 and 3 (Ward 2, 4,5, 6 and 9 Ndwedwe LM) Surface Water Supply | Design         | Funding to implement an augmentation scheme from surface water.                           | 600 000 000          | Design & Tender    | 13 500 000                  | Construction        | 25 718 750          | Construction      | 46 731 771                    |
| ZKZNIL16                    | Other          | Maphumulo | Maqumbi (Maphumulo Ward 4) Ground Water Source Augmentation                        | Maqumbi (Maphumulo Ward 4) Ground Water Source Augmentation                        | Planning       | Bulk augmentation.  | 15 000 000           | Planning & Design  | 825 000                     | Construction        | 2 756 250           | -                 | 11 418 750                    |
| ZKZNIL18                    | Other          | Ndwedwe   | KwaChili/KwaShangase (Ward 17 and 18 Ndwedwe LM) Bulk Water Supply Augmentation    | KwaChili/KwaShangase (Ward 17 and 18 Ndwedwe LM) Bulk Water Supply Augmentation    | Feasibility    | Bulk Water Augmentation   | 35 000 000           | Feasibility        | 875 000                     | Construction        | 6 635 417           | -                 | 27 489 583                    |
| ZKZNIL20                    | Other          | KwaDukuza | Driefontein (KwaDukuza Ward 21) Quality Water Supply                               | Driefontein (KwaDukuza Ward 21) Quality Water Supply                               | Planning       | Funding to implement a new water scheme that will provide the community with clean water. | 30 000 000           | Design & Tender    | 1 200 000                   | Construction        | 5 600 000           | -                 | 23 200 000                    |
| ZKZNIL21                    | Other          | Maphumulo | Ngcebo WTW upgrade   | Ngcebo Water Treatment Plant Upgrade   | Feasibility    | Increase the capacity of the WW to ensure security of water supply                        | 30 000 000           | Design & Tender    | 750 000                     | Construction        | 5 687 500           | -                 | 23 562 500                    |
|                             |                | KwaDukuza |  |  |                |   | 716 000 000          | -                  | 11 735 000                  | -                   | 82 949 250          | -                 | 104 499 075                   |
|                             |                | Mandeni   |  |  |                |   | 355 655 781          | -                  | 2 310 000                   | -                   | 37 742 500          | -                 | 48 973 750                    |
|                             |                | Maphumulo |  |  |                |   | 693 113 161          | -                  | 3 975 000                   | -                   | 46 337 500          | -                 | 84 734 375                    |
|                             |                | Ndwedwe   |  |  |                |   | 685 000 000          | -                  | 16 625 000                  | -                   | 51 454 167          | -                 | 88 546 354                    |
|                             |                | All       |  |  |                |   | 500 000 000          | -                  | 9 000 000                   | -                   | 19 966 667          | -                 | 31 402 222                    |
| <b>Totals</b>               |                |           |  |  |                |   | <b>2 949 768 942</b> | <b>-</b>           | <b>43 645 000</b>           | <b>-</b>            | <b>238 450 083</b>  | <b>-</b>          | <b>358 155 776</b>            |

## Annexure B

# Water Supply & Sanitation Footprints

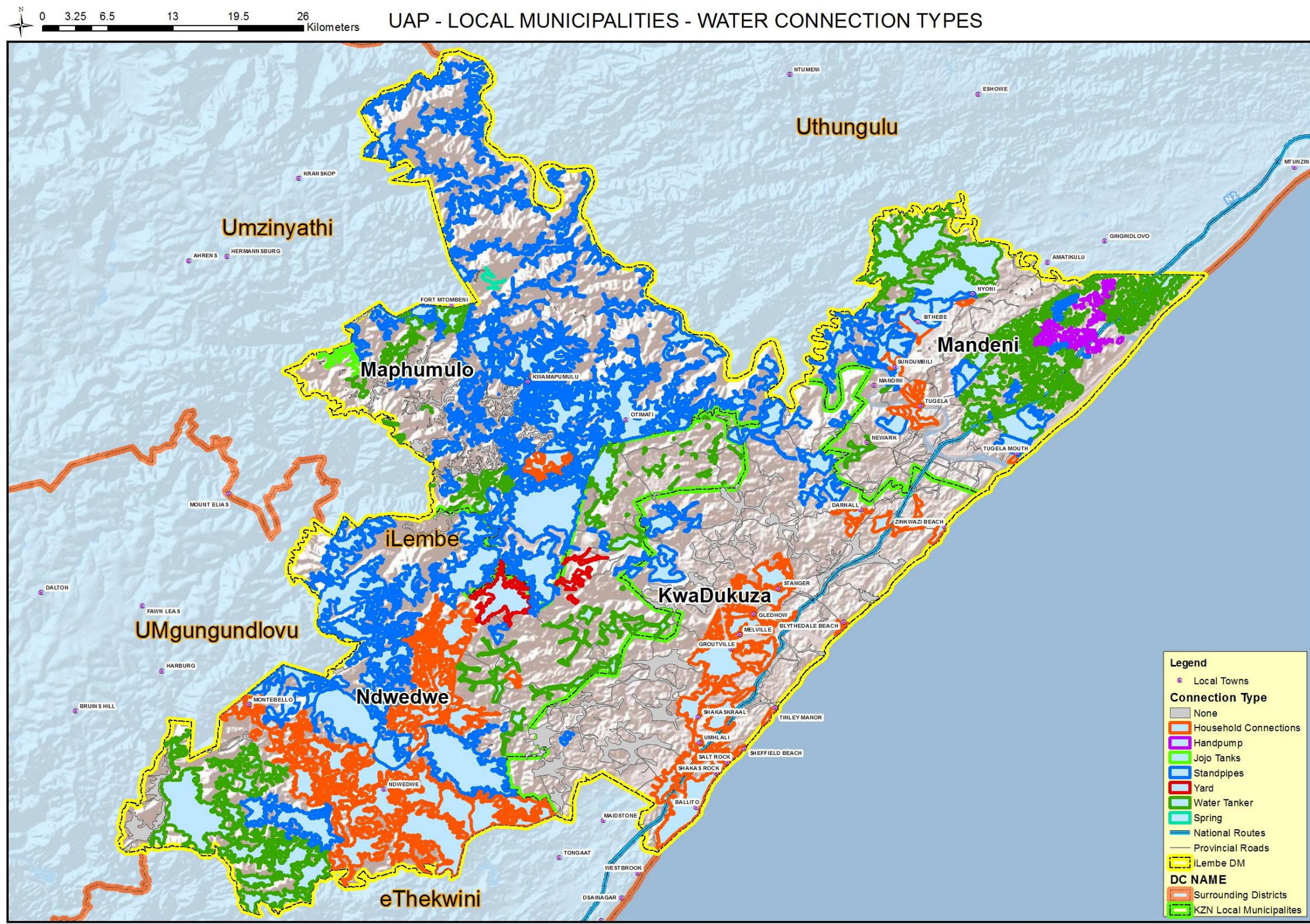


Map 1: iLembe District Municipality Water Supply

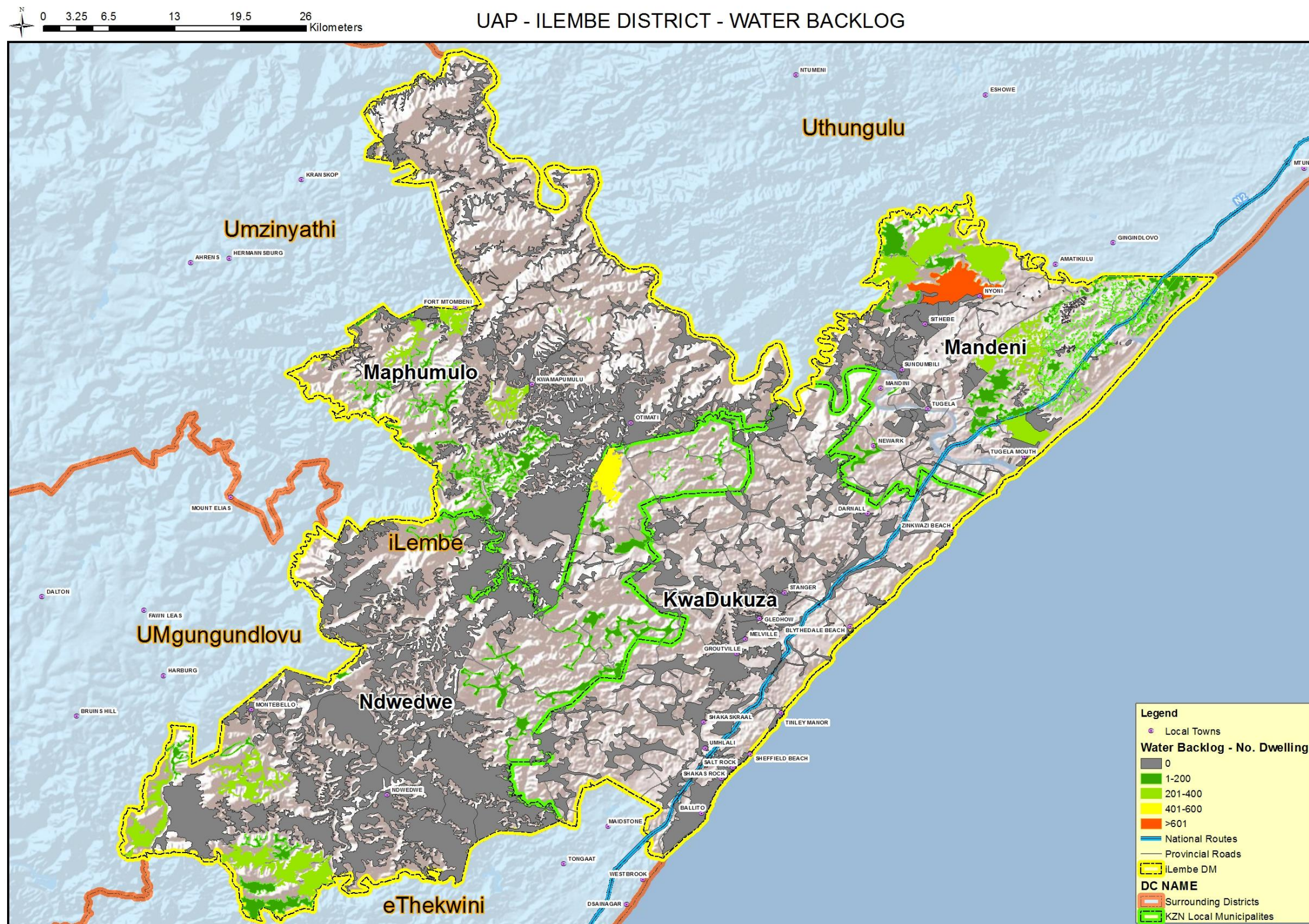


Map 2: iLembe District Municipality Dwelling Distribution

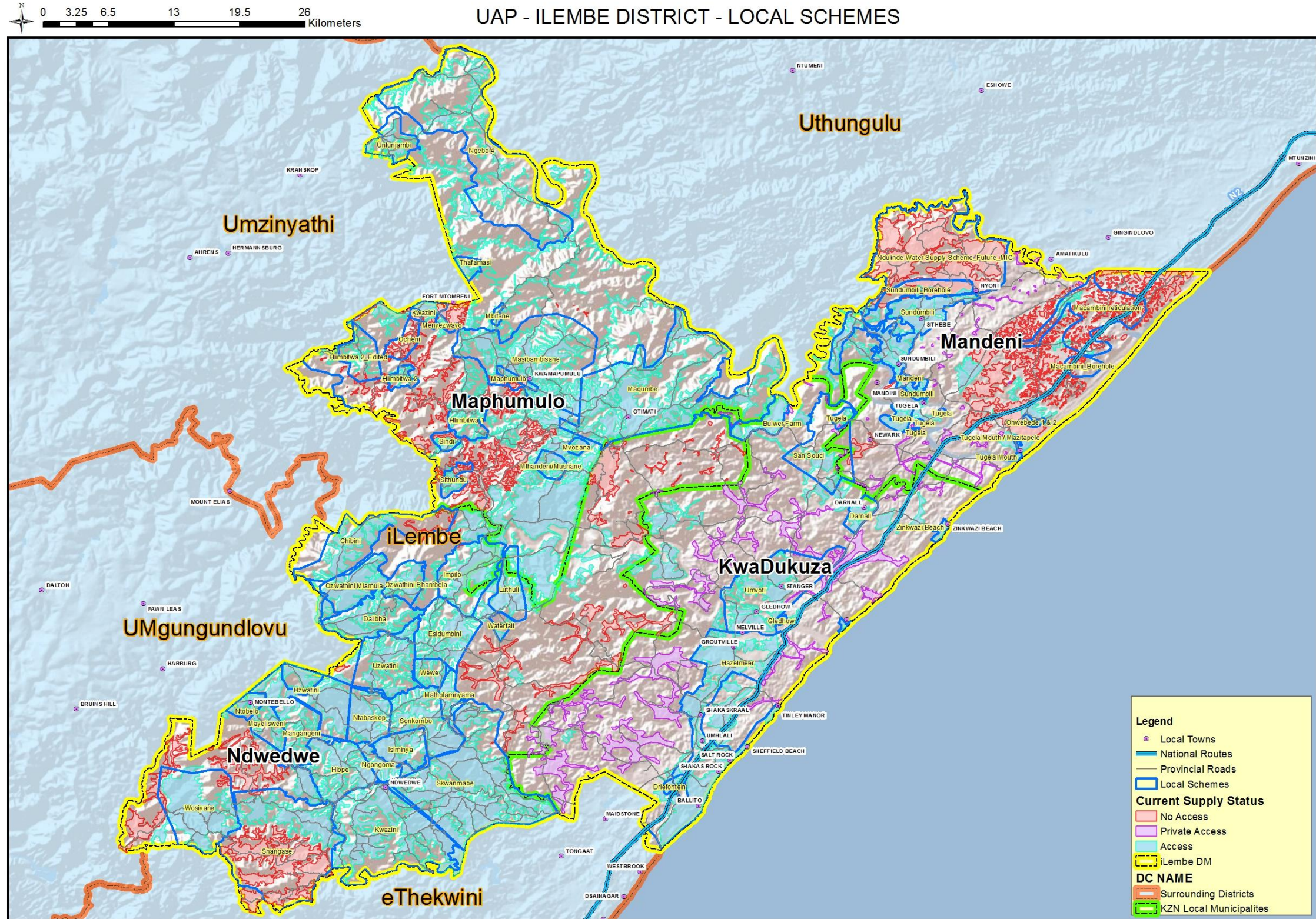




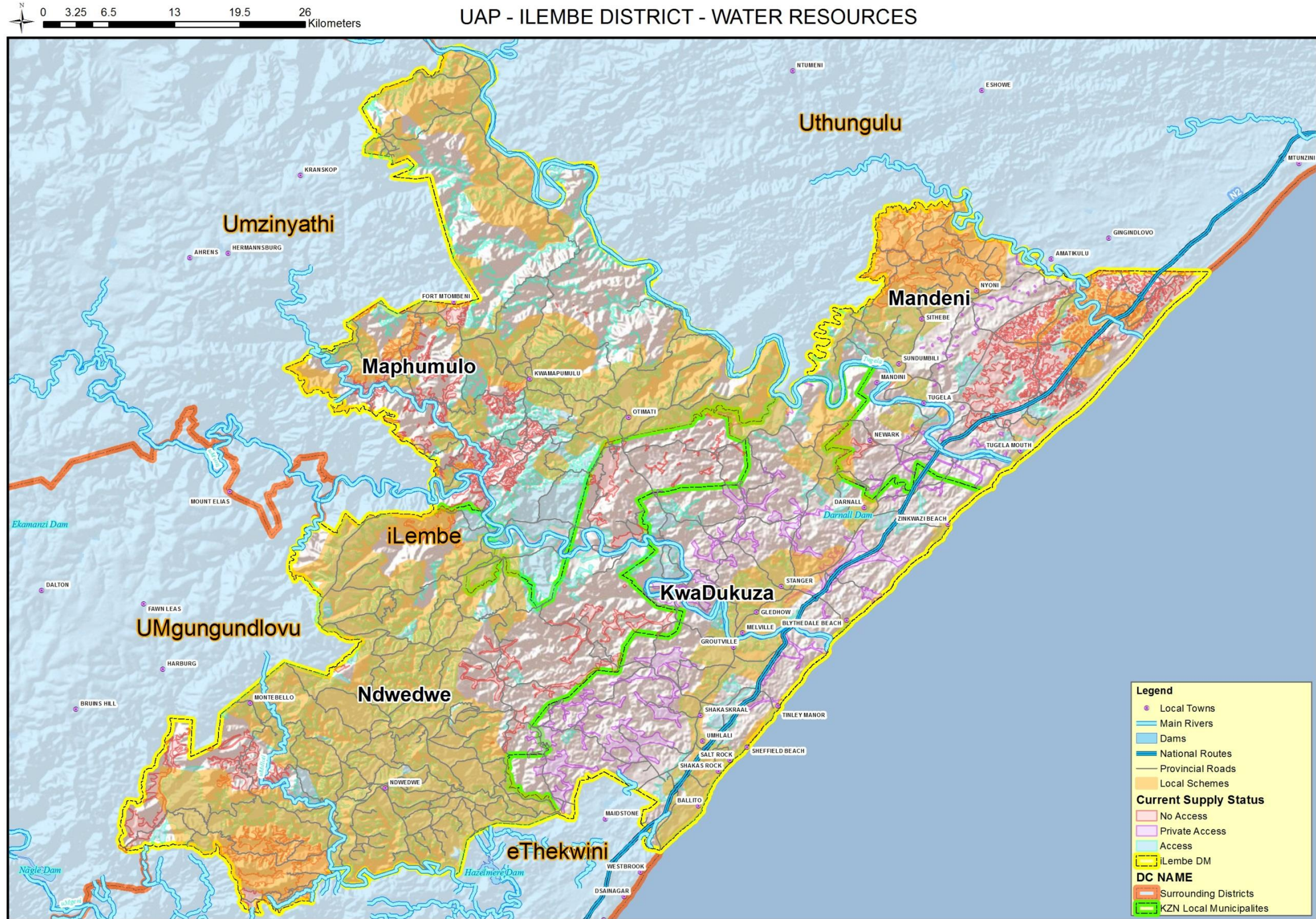
Map 3: iLembe District Municipality Water Connection Types



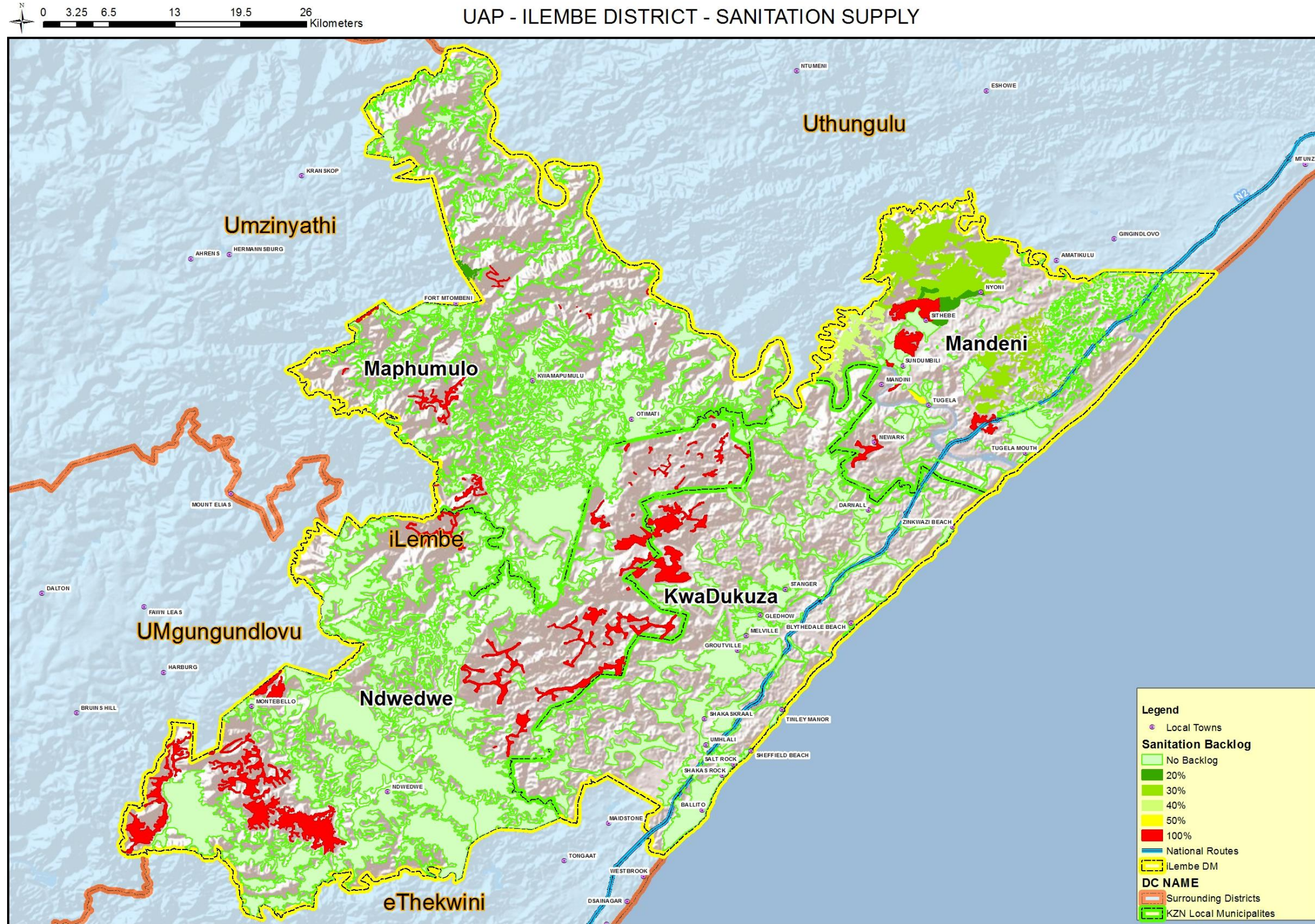
**Map 4: iLembe District Municipality Water Backlogs**



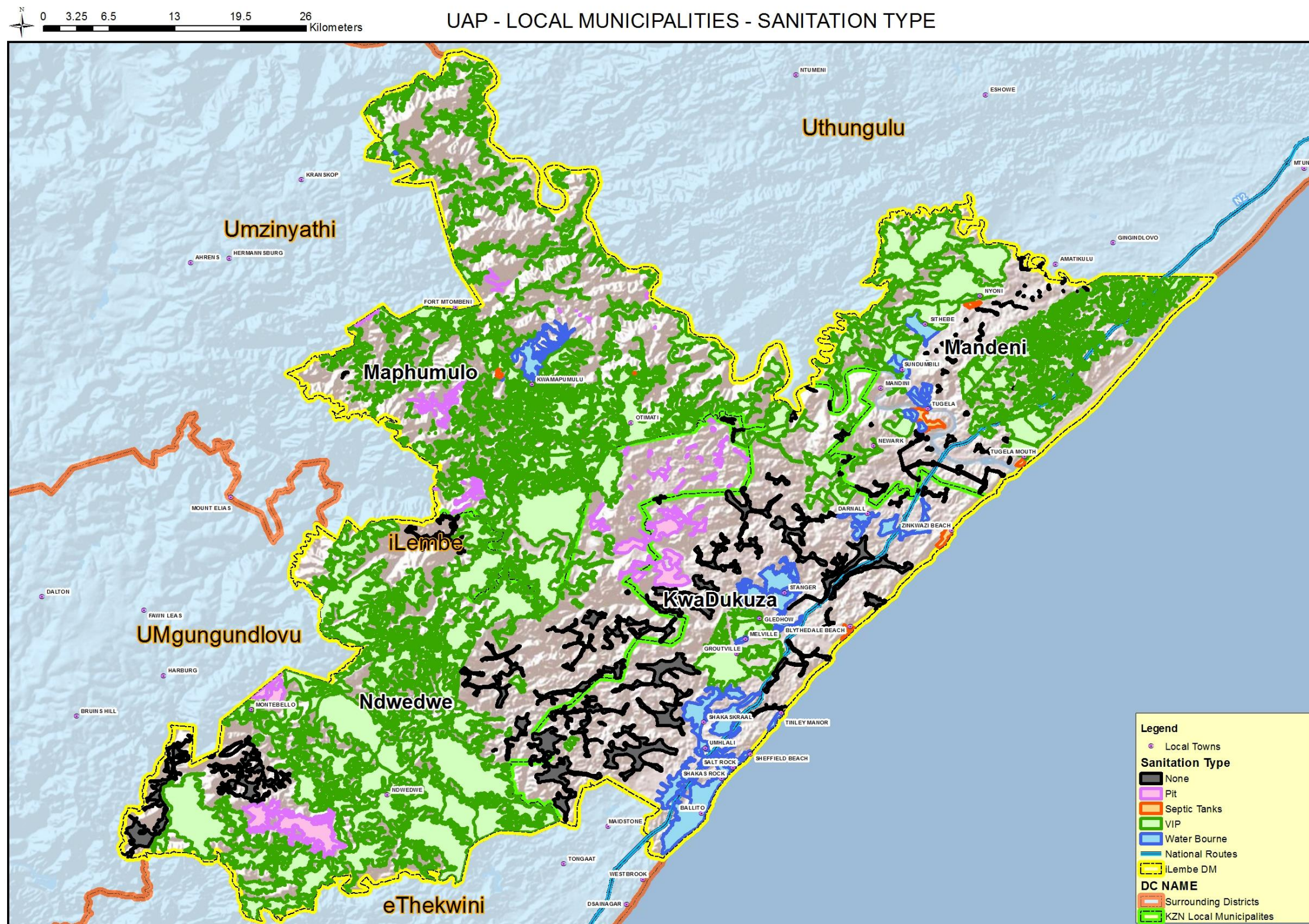
**Map 5: iLembe District Municipality Local Schemes**



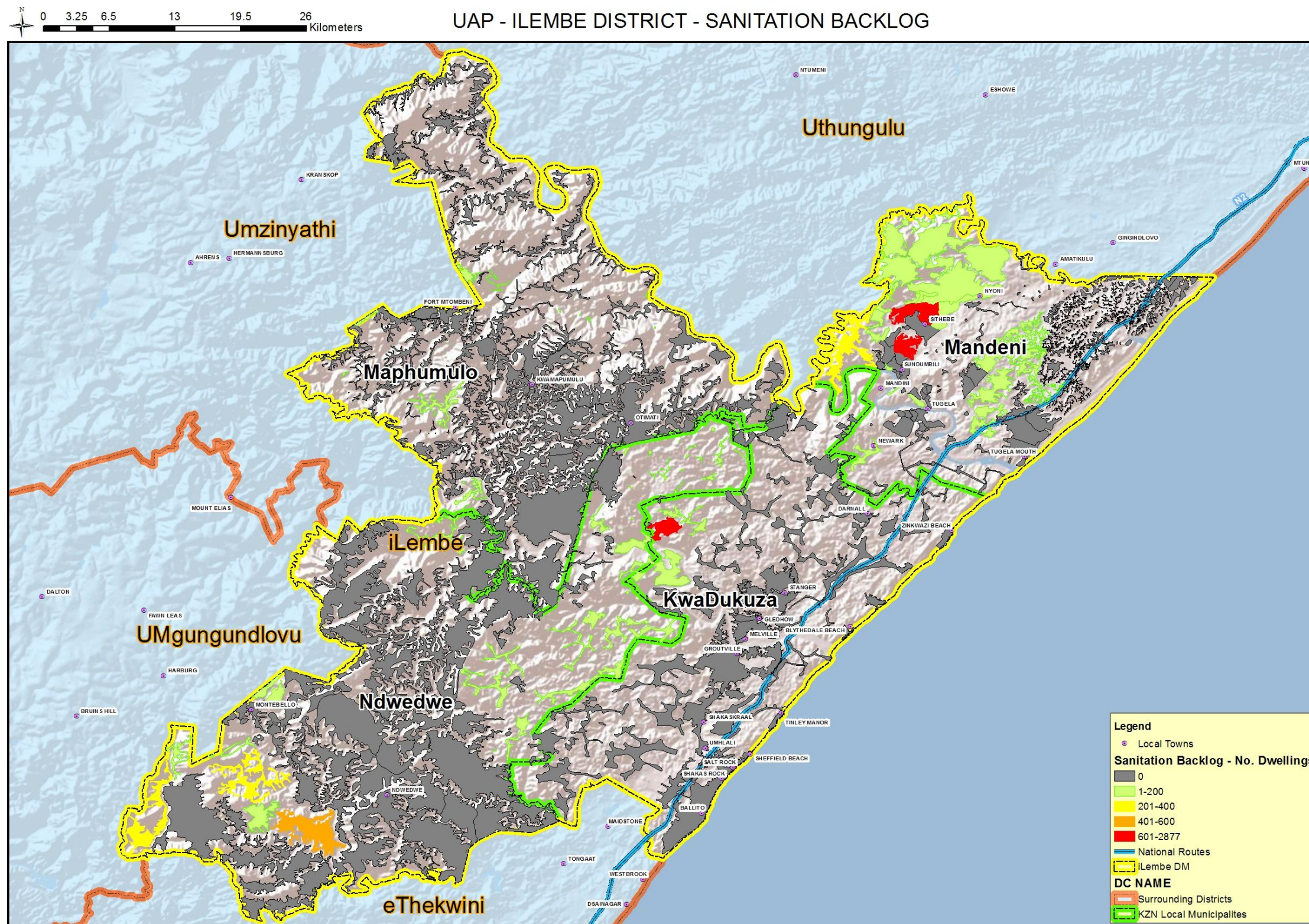
Map 6: iLembe District Municipality Water Resources



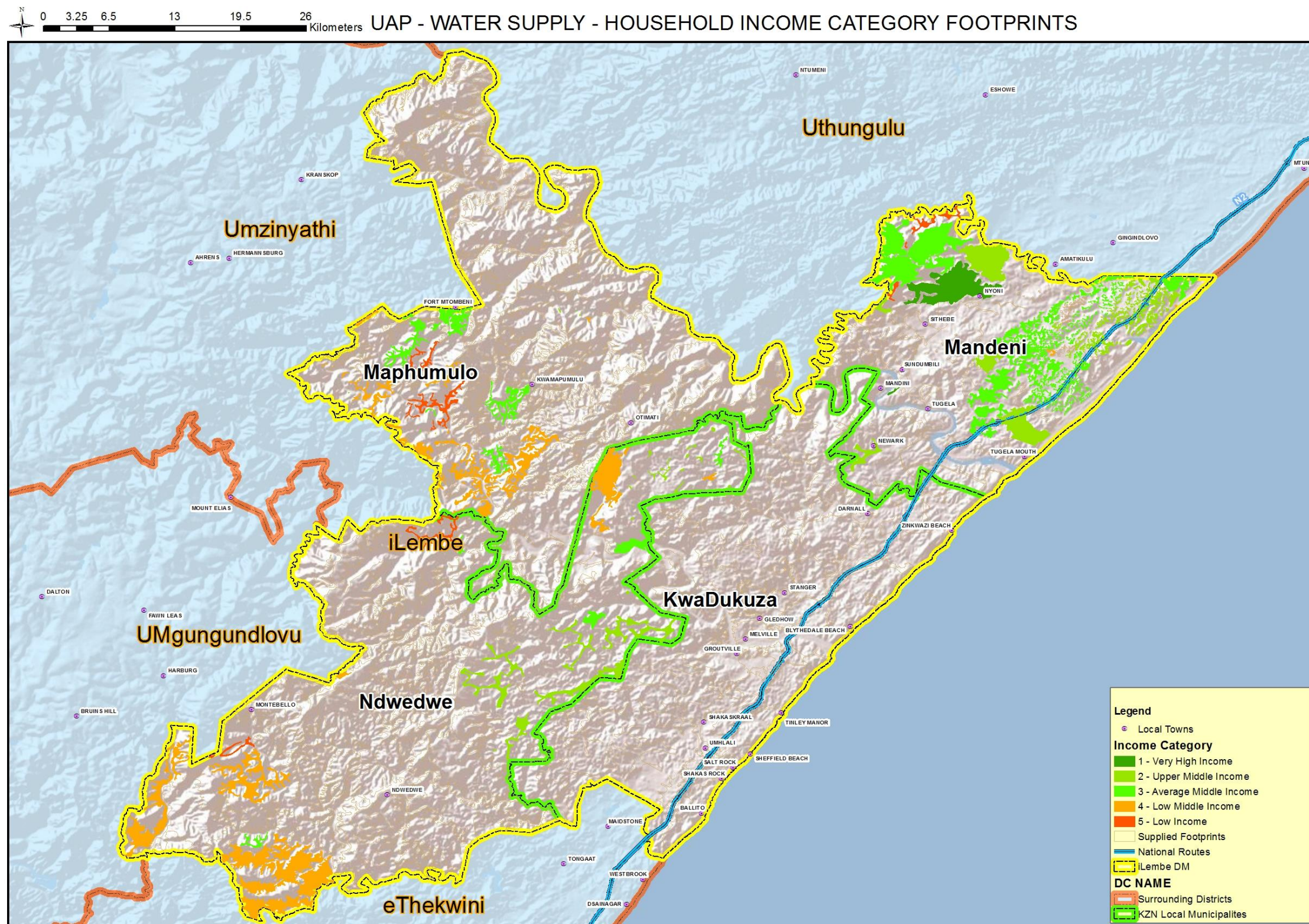
**Map 7: iLembe District Municipality Sanitation Supply**



Map 8: iLembe District Municipality Sanitation Types



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

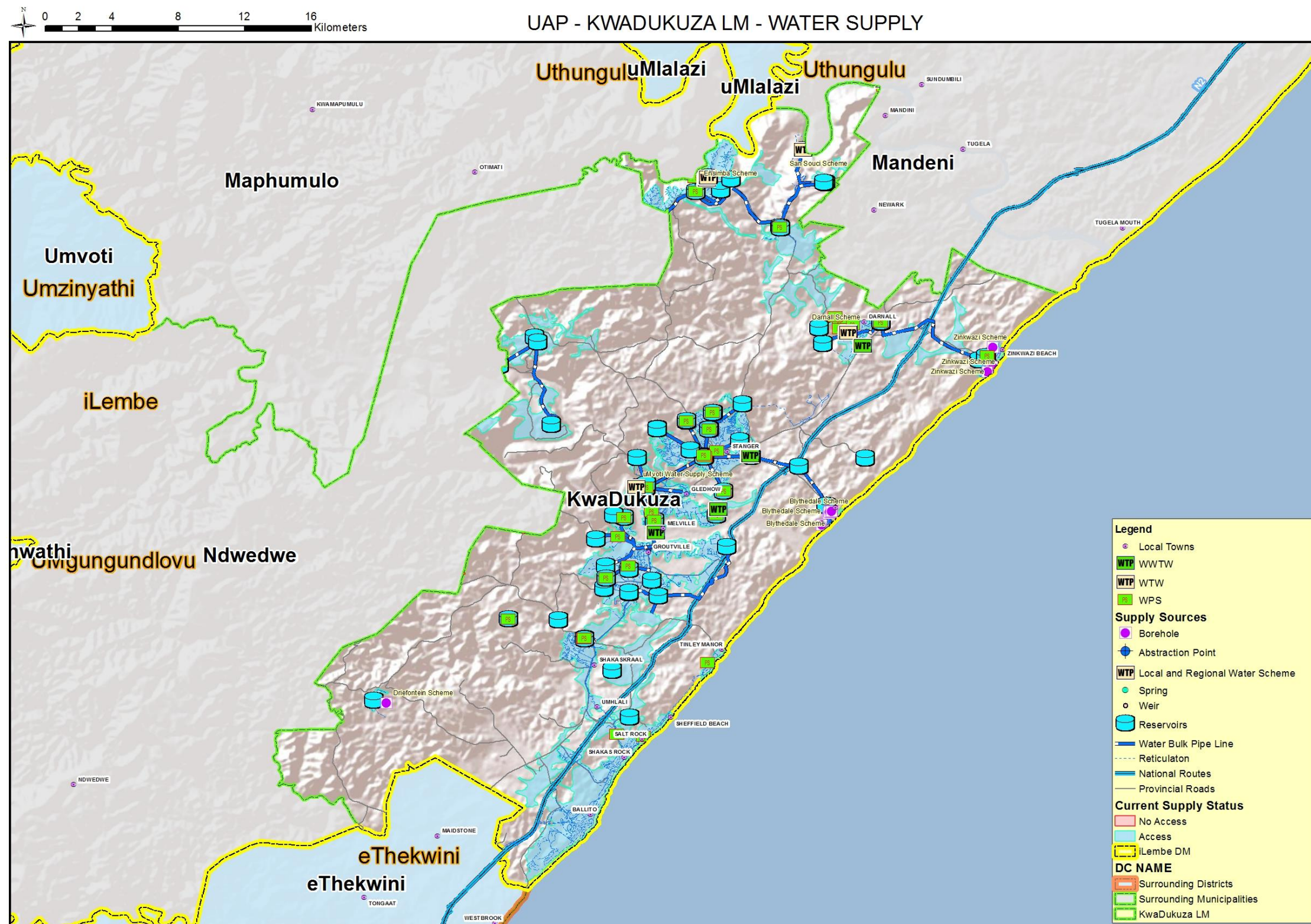


Map 10: iLembe District Municipality Household Income Categories

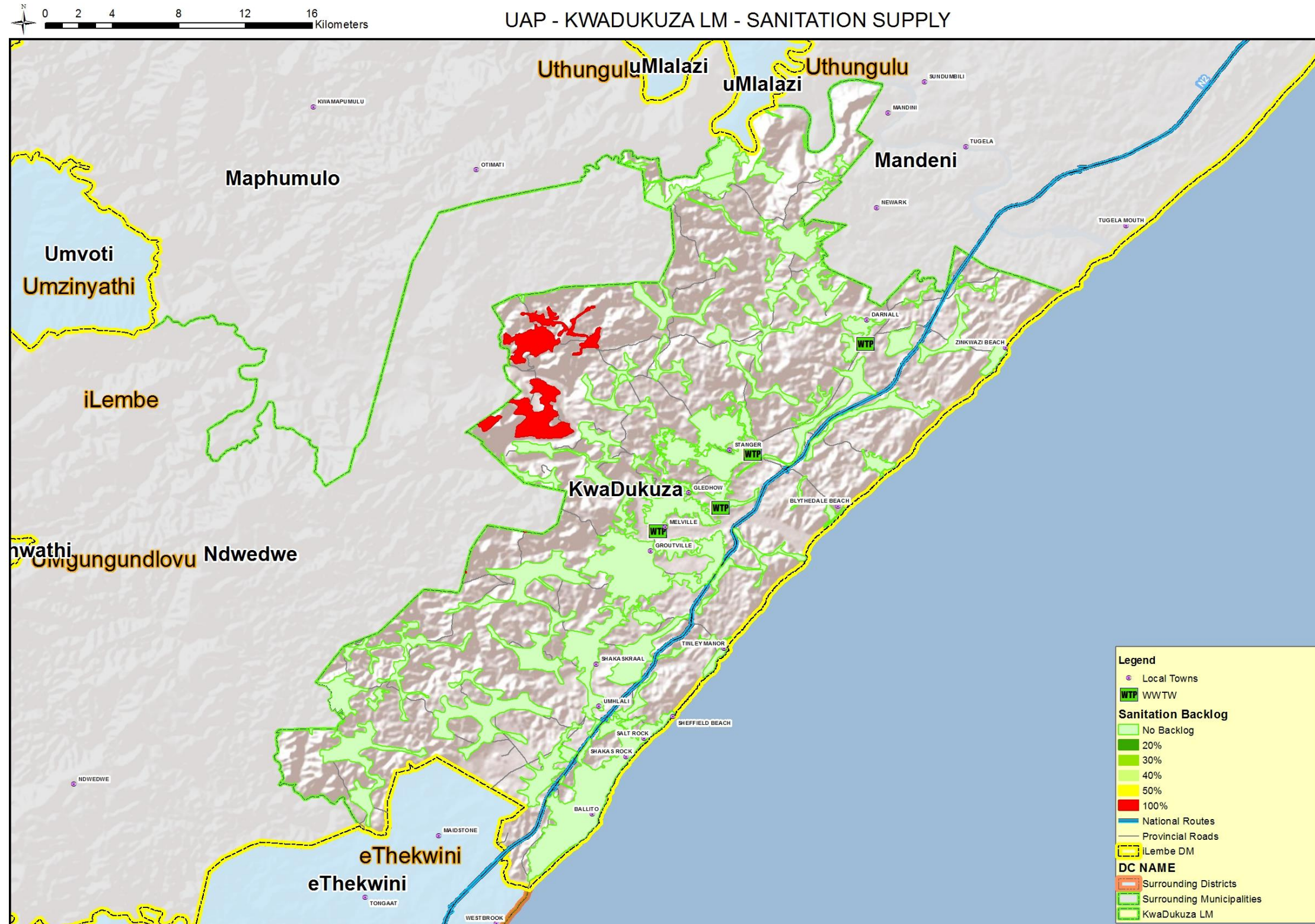


## KwaDukuza

## Water & Sanitation Maps



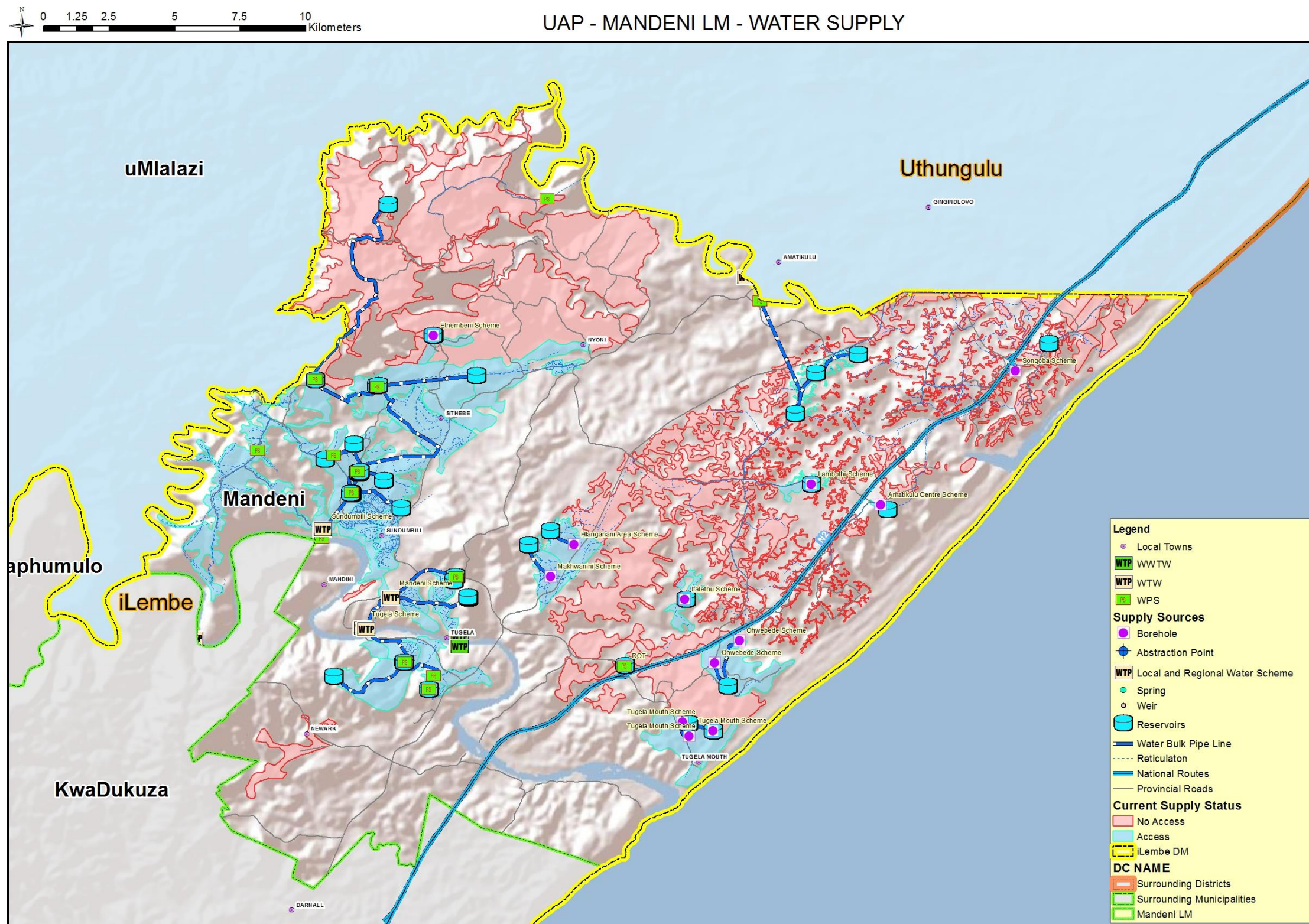
Map 11: KwaDukuza Water Supply



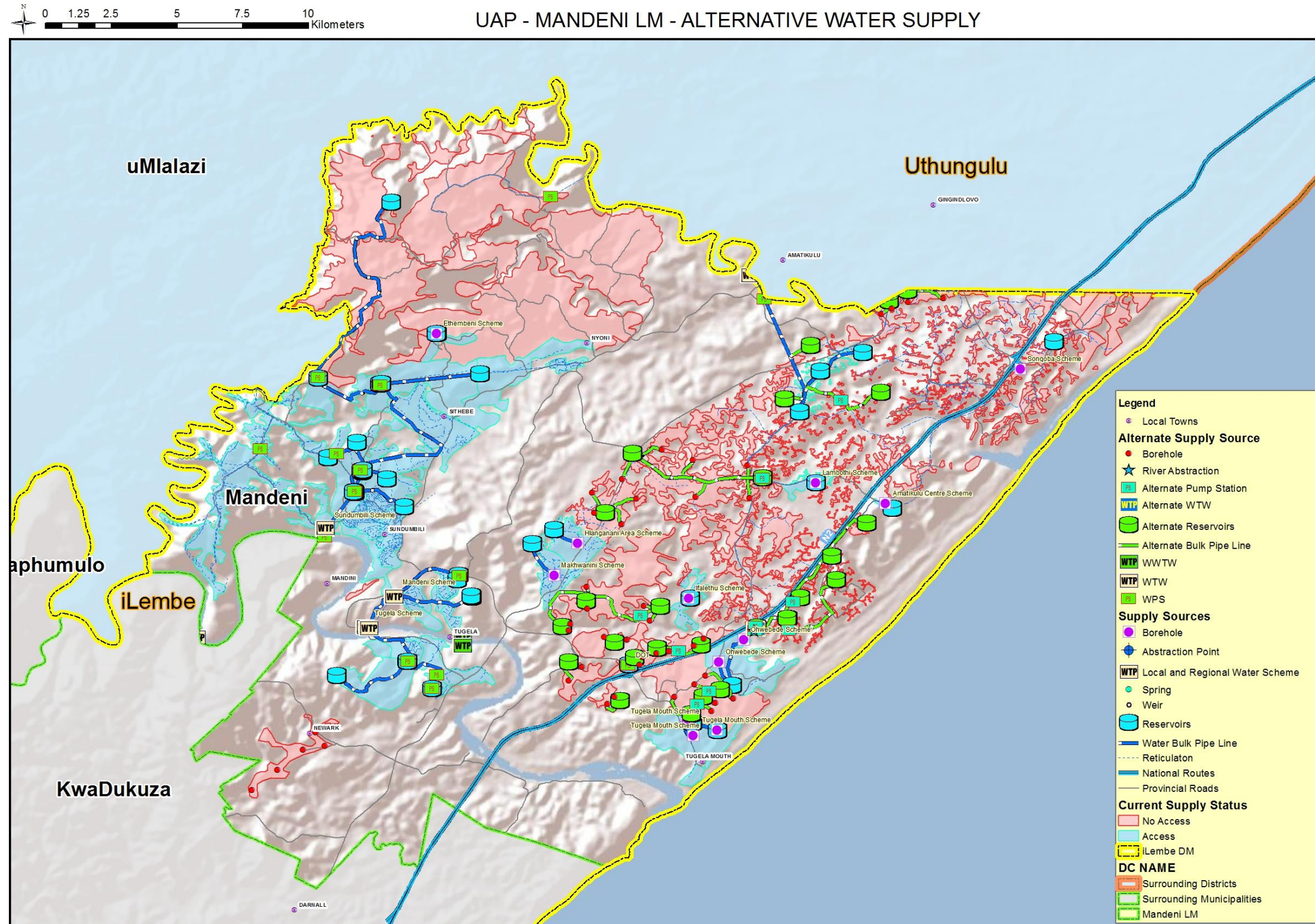
Map 12: KwaDukuza Sanitation Supply

## Mandeni

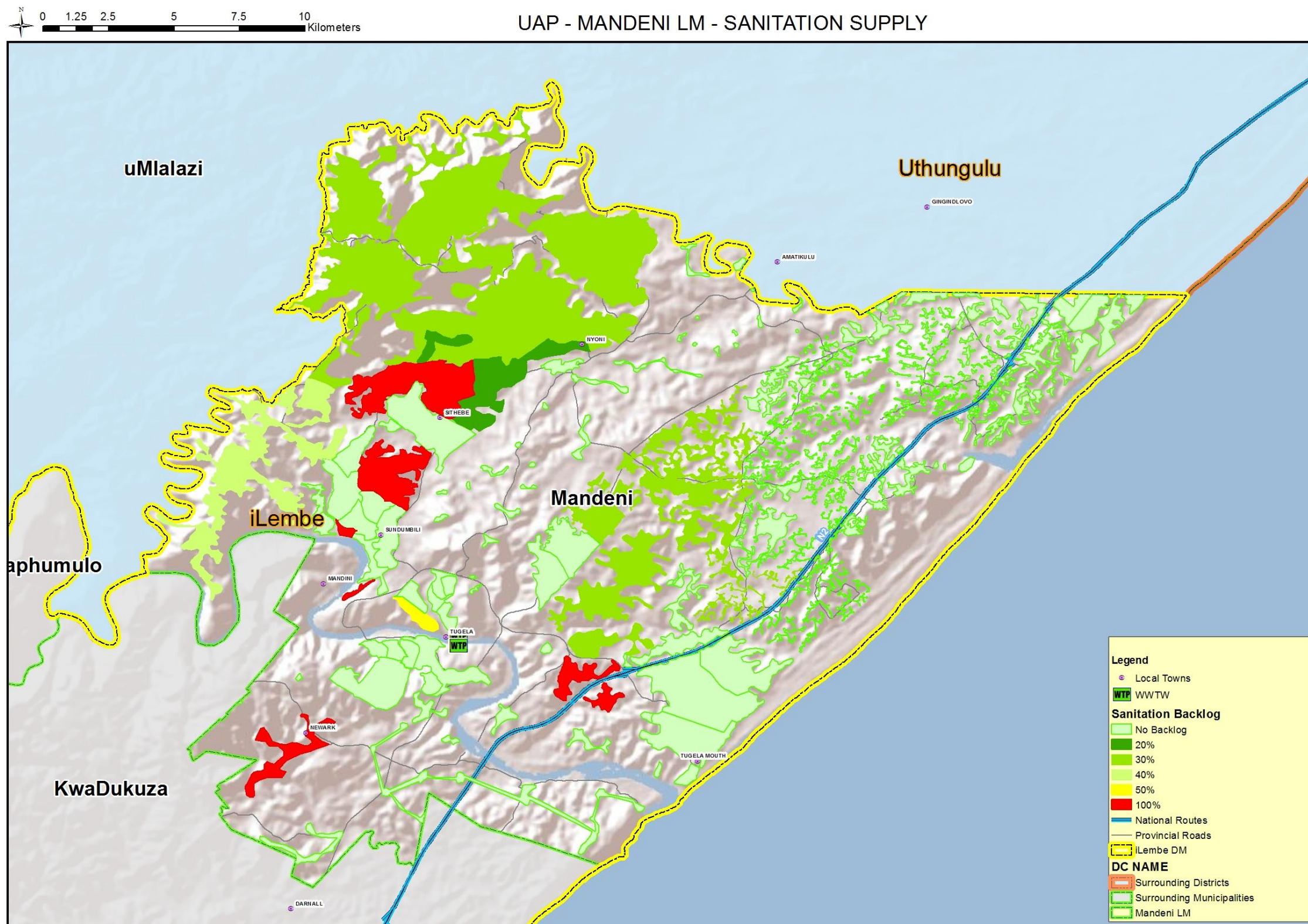
## Water & Sanitation Maps



Map 13: Mandeni Water Supply



**Map 14: Mandeni Proposed Alternate Schemes**

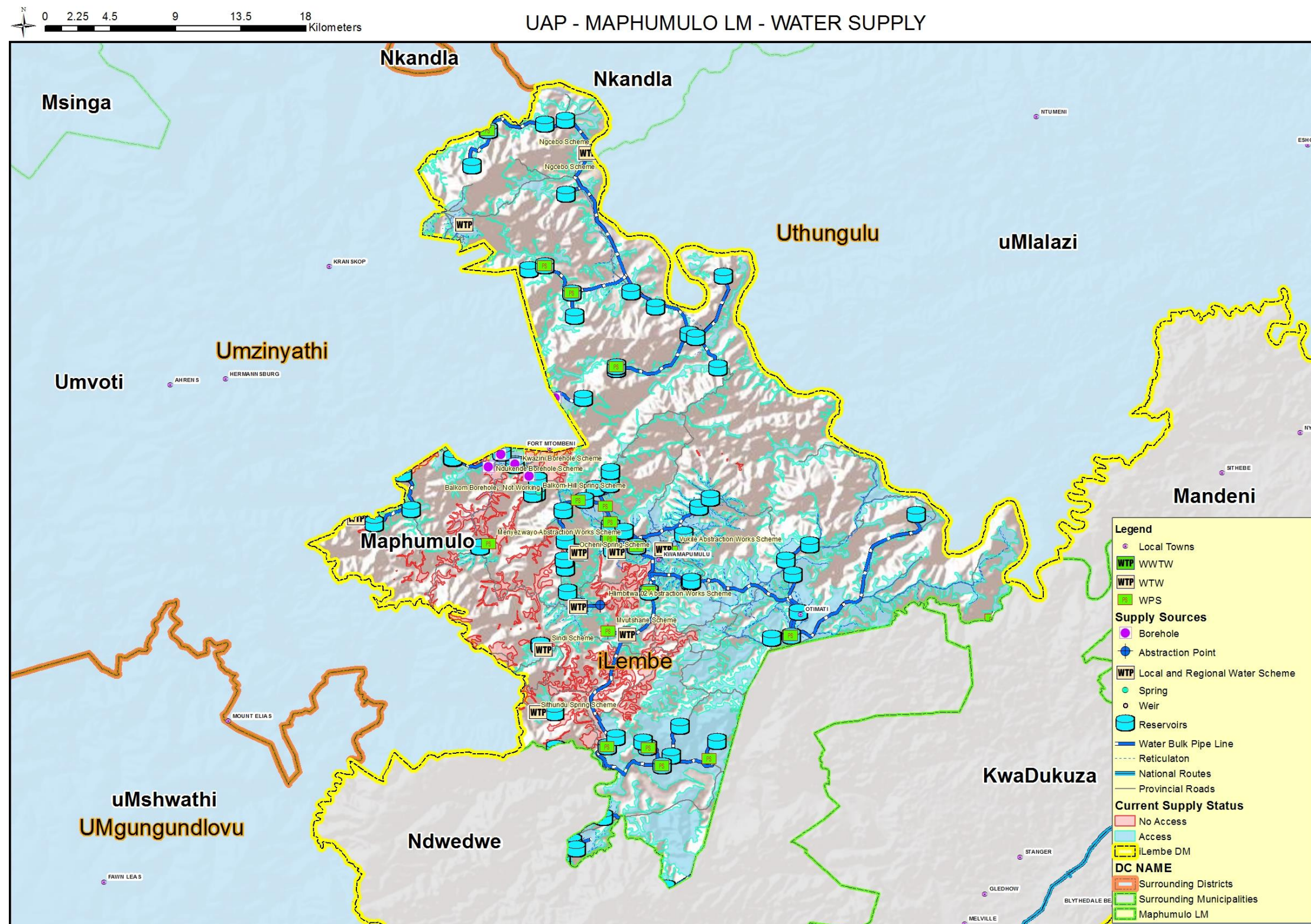


Map 15: Mandeni Sanitation Supply

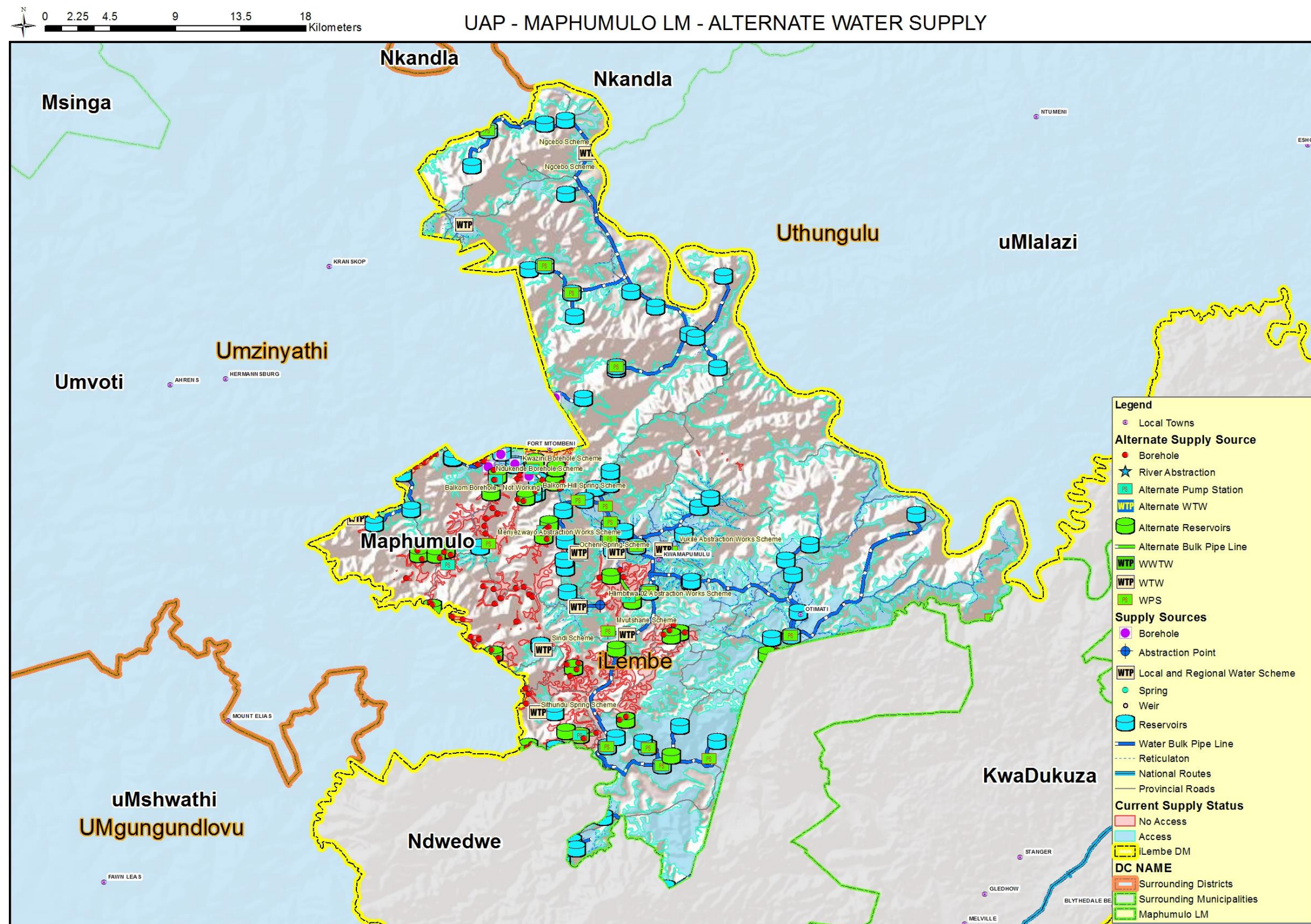
## Maphumulo

## Water & Sanitation Maps

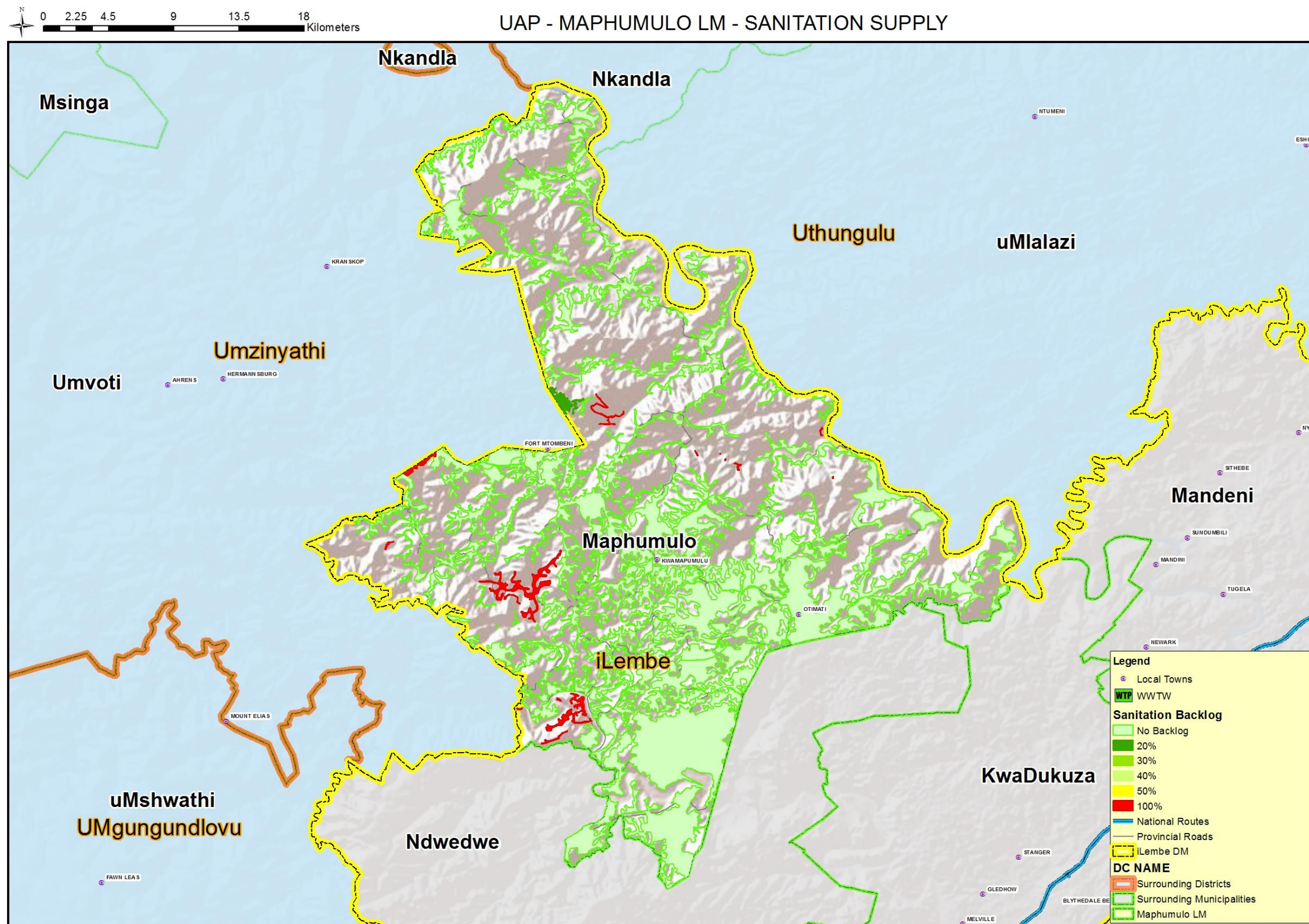




**Map 16: Maphumulo Water Supply**



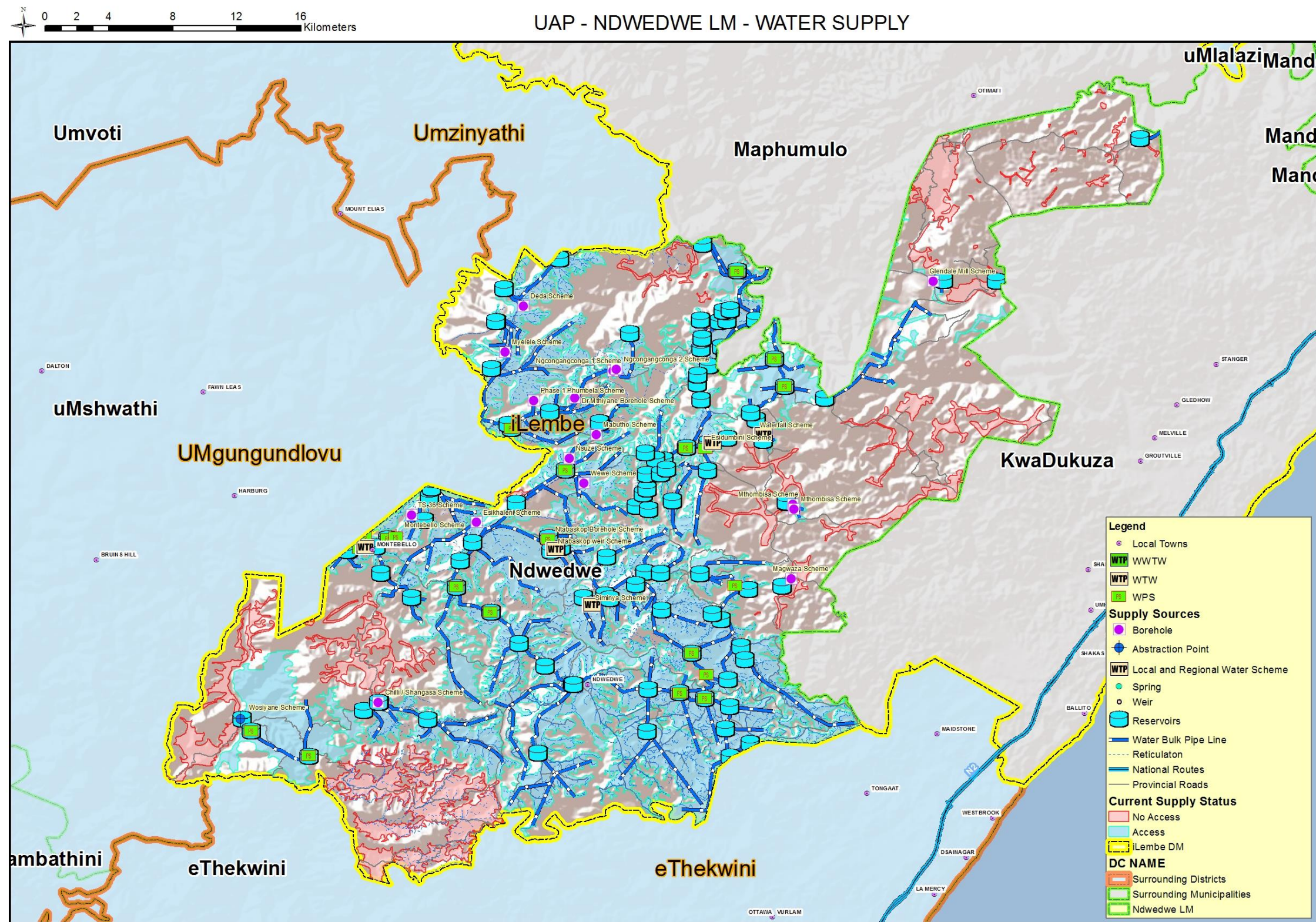
Map 17: Maphumulo Proposed Alternate Schemes



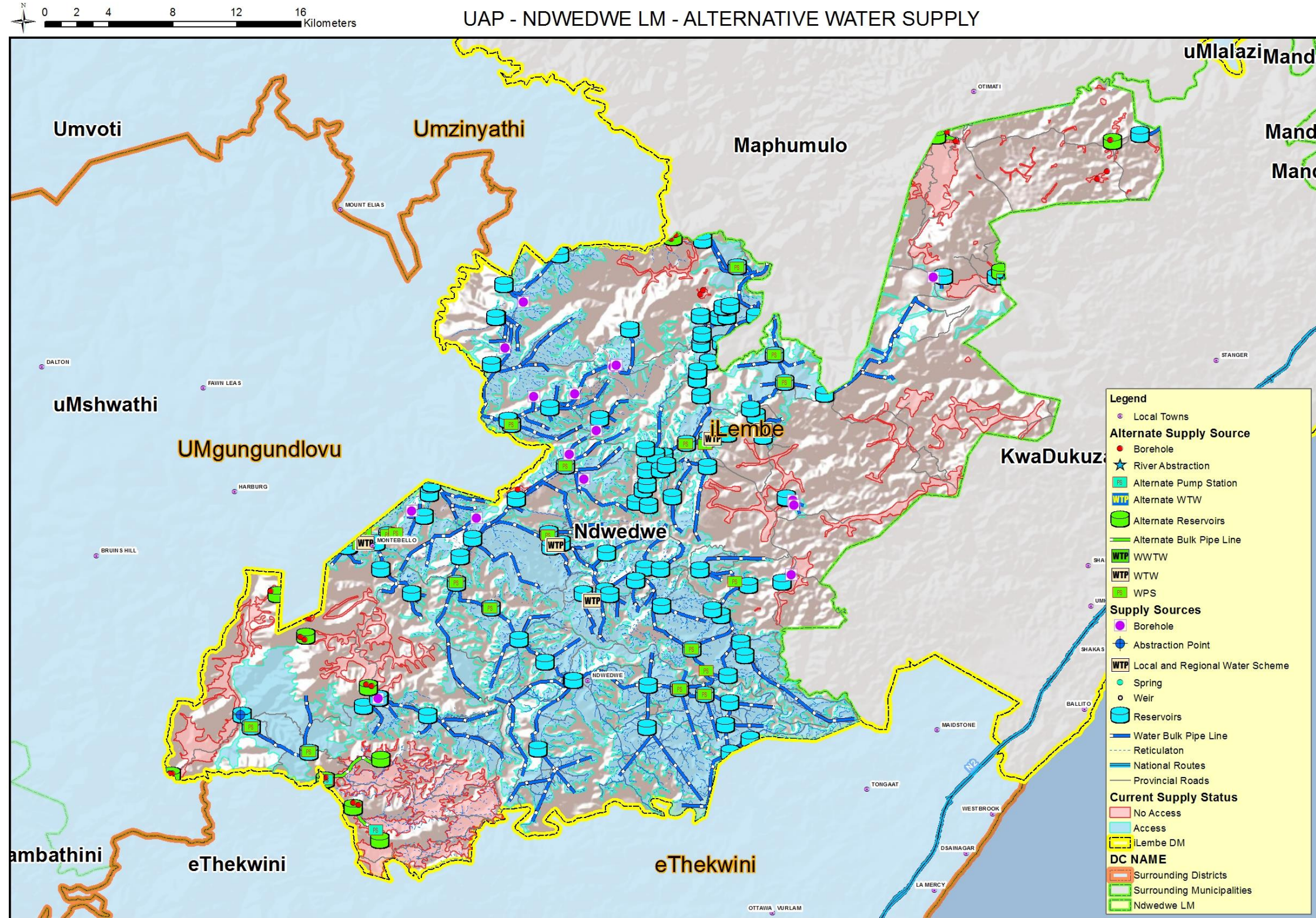
**Map 18: Maphumulo Sanitation Supply**

## Ndwedwe

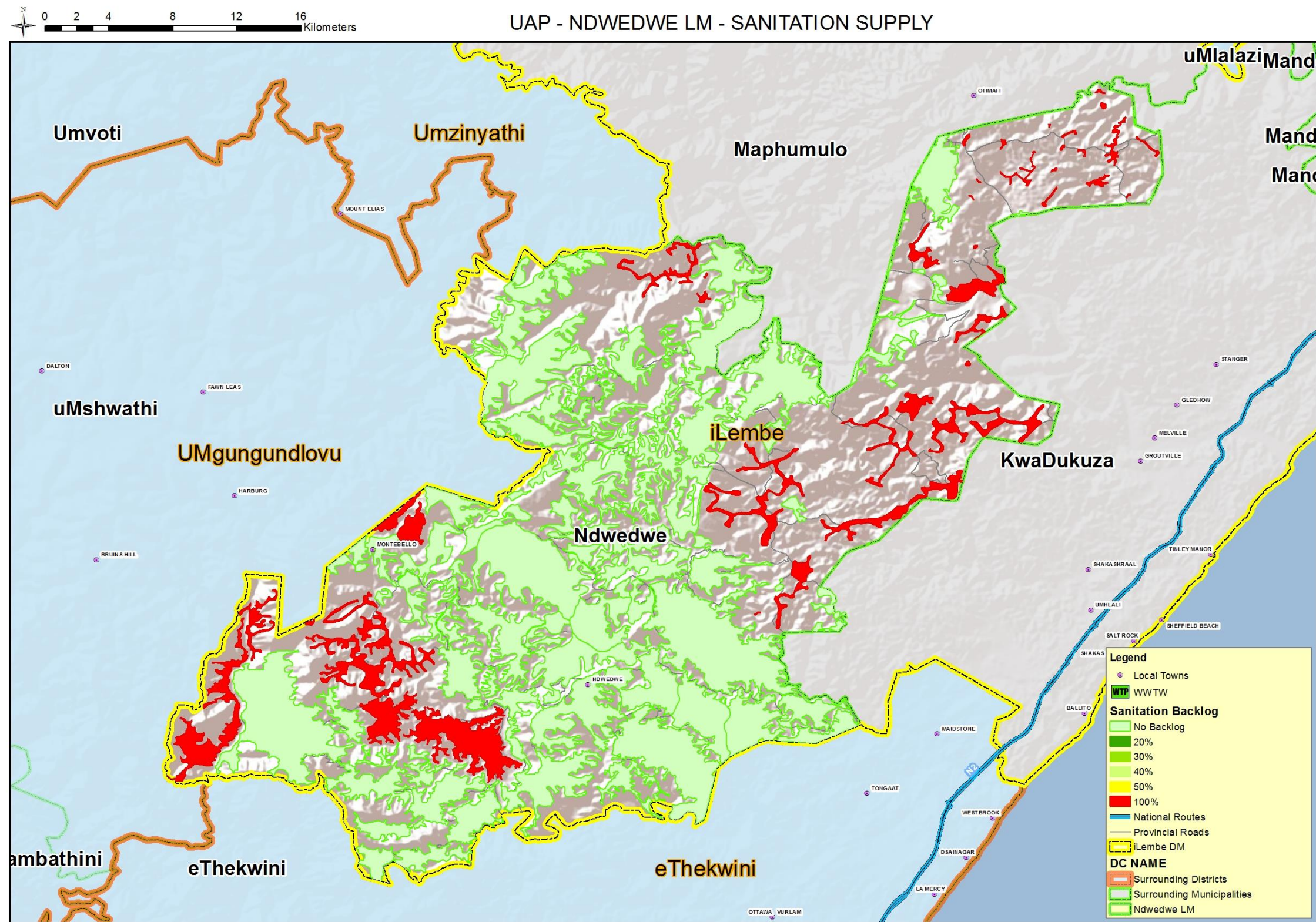
## Water & Sanitation Maps



Map 19: Ndwedwe Water Supply



Map 20: Ndwedwe Proposed Alternate Schemes



Map 21: Ndwedwe Sanitation Supply

## Annexure C

### Attributes Data/Tables



## Water Supply Footprints

| Field Name | SMEC Field    | Alias                     | Description   | Units                       | Source   |
|------------|---------------|---------------------------|---|-----------------------------|--|
| DM         |               | 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

# iLembe District Municipality Water & Sanitation Project List

| Project  | Total Budget    | 2012/13         | 2013/14         | 2014/15         |
|--|-----------------|-----------------|-----------------|-----------------|
| Siza Water Concession Low Cost Housing Connections (KwaDukuza)     | R 2 800 000.00  | R 1 300 000.00  | R 1 500 000.00  | R 2 000 000.00  |
| Siza Water Concession Low Cost Housing VIP de-sludging (KwaDukuza) | R 7 500 000.00  | R 2 500 000.00  | R 2 500 000.00  | R 2 500 000.00  |
| Jojo Tanks x100 Whole District except KwaDukuza                    | R 2 700 000.00  | R 900 000.00    | R 900 000.00    | R 900 000.00    |
| Telemetry all sites(Whole District)                                | R 9 000 000.00  | R 9 000 000.00  | R -             | R -             |
| <b>Maphumulo Water</b>   |                 |                 |                 |                 |
| Umvoti Water Purification Works                                    | R 1 146 000.00  | R 1 146 000.00  | R -             | R -             |
| <b>Mandeni Water</b>   |                 |                 |                 |                 |
| Mandeni Water Conservation and Management                          | R 1 420 000.00  | R 9 200 000.00  | R 5 000 000.00  | R -             |
| Sundumbili Waste Water Works                                       | R 1 000 000.00  | R 500 000.00    | R 500 000.00    | R -             |
| Water Extension  | R 900 000.00    | R 300 000.00    | R 300 000.00    | R -             |
| <b>Groutville / Ndwedwe Water</b>                                  |                 |                 |                 |                 |
| Nsuze River Abstraction /Sdumbini                                  | R 8 000 000.00  | R 6 000 000.00  | R 2 000 000.00  | R -             |
| Various Extensions (as per request)                                | R 1 500 000.00  | R 500 000.00    | R 500 000.00    | R 500 000.00    |
| <b>KwaDukuza Sewer</b>   |                 |                 |                 |                 |
| KwaDukuza sewer reticulation upgrade                               | R 15 000 000.00 | R 5 000 000.00  | R 5 000 000.00  | R 5 000 000.00  |
| KwaDukuza sewer pump stations                                      | R 7 500 000.00  | R 2 000 000.00  | R 2 500 000.00  | R 3 000 000.00  |
| <b>MIG Funded Projects</b>   |                 |                 |                 |                 |
| Ngcebo Community Water Supply(Maphumulo)                           | R 6 400 000.00  | R 2 800 000.00  | R 2 800 000.00  | R 2 800 000.00  |
| Ngcebo/KwaDukuza Water Supply (Maphumulo/KwaDukuza)                | R 65 000 000.00 | R 30 000 000.00 | R 30 000 000.00 | R 5 000 000.00  |
| Hlimbithwa 1 Water Supply (Maphumulo)                              | TBC             | TBC             | TBC             | TBC             |
| Ozwothini Gcwensa/Mlamula Water Supply(Ndwedwe)                    | R 2 000 000.00  | R 2 000 000.00  | R -             | R -             |
| Ozwothini Gcwensa/Nodwengu Water Supply(Ndwedwe)                   | TBC             | TBC             | TBC             | TBC             |
| Ozwothini Mathulini Water Supply (Ndwedwe)                         | R 600 000.00    | R 600 000.00    | R -             | R -             |
| Luthuli Water Project (Ndwedwe)                                    | TBC             | TBC             | TBC             | TBC             |
| Mthombisa Water Supply Ndwedwe                                     | TBC             | TBC             | TBC             | TBC             |
| Sans Sauci Bulwer Farm Extension (KwaDukuza)                       | R 1 000 000.00  | R 1 000 000.00  | R -             | R -             |
| Macambini Water Supply Phase 2 (Mandeni)                           | R 75 000 000.00 | R 25 000 000.00 | R 25 000 000.00 | R 25 000 000.00 |
| Ndulinde Water Supply Scheme (Mandeni)                             | R 55 000 000.00 | R 30 000 000.00 | R 20 000 000.00 | R 5 000 000.00  |
| Ndwedwe Ward 16 Sanitation   | TBC             | TBC             | TBC             | TBC             |
| Ndwedwe HH Sanitation  | R 35 000 000.00 | R 10 000 000.00 | R 10 000 000.00 | R 15 000 000.00 |
| Mandeni Ward 16 HH Sanitation                                      | R 37 000 000.00 | R 10 000 000.00 | R 12 000 000.00 | R 15 000 000.00 |
| Maqumbi Household Sanitation Phase 2 (Maphumulo)                   | R 37 000 000.00 | R 10 000 000.00 | R 12 000 000.00 | R 15 000 000.00 |
| Hlimbithwa 2 Water Supply Scheme (Maphumulo)                       | TBC             | TBC             | TBC             | TBC             |
| Inyoni Housing Bulk Water Supply (Mandeni)                         | R 28 989 927.00 | R 13 579 350.00 | R 13 579 350.00 | R 1 831 227.00  |
| Inyoni Housing Bulk Sewer Supply (Mandeni)                         | R 2 631 737.00  | R 160 000.00    | R 1 266 022.00  | R 1 205 715.00  |
| Mdlebeni Housing Package Sewer Plant (KwaDukuza)                   | R 20 000 000.00 | R 10 000 000.00 | R 10 000 000.00 | R -             |
| Driefontein Housing Package Sewer Plant (KwaDukuza)                | R 20 000 000.00 | R 10 000 000.00 | R 10 000 000.00 | R -             |
| Groutville Bulk Sewer Connection (KwaDukuza)                       | R 68 000 000.00 | R 3 000 000.00  | R 15 000 000.00 | R 50 000 000.00 |
| Balcom / Kwasizabantu (Maphumulo)                                  | R 79 522 278.00 | R 21 571 650.00 | R 27 950 628.00 | R 30 000 000.00 |
| <b>Other Grants</b>  |                 |                 |                 |                 |

| Project  | Total Budget            | 2012/13                 | 2013/14                 | 2014/15                 |
|--|-------------------------|-------------------------|-------------------------|-------------------------|
| Melville Package Treatment Plant - COGTA KwaDukuza | TBC                     | TBC                     | TBC                     | TBC                     |
| Lower Tugela Bulk Water Supply - DWA KwaDukuza     | R 252 746 000.00        | R 64 000 000.00         | R 96 000 000.00         | R 92 746 000.00         |
| Refurbishment of waste water works - DWAF All      | R 3 250 000.00          | R 3 150 000.00          | R 100 000.00            | R -                     |
| Regional Bulk Infrastructure                       | R 74 576 000.00         | R 37 576 000.00         | R 37 000 000.00         | R -                     |
| <b>Total</b>                                       | <b>R 927 781 942.00</b> | <b>R 325 383 000.00</b> | <b>R 344 896 000.00</b> | <b>R 273 982 942.00</b> |