

Concept Note

Enhancing adaptive capacity through reducing (water) systems leakages for communities vulnerable to climate change in iLembe District municipality, KwaZulu-Natal (South Africa)

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Introduction

The iLembe District Municipality is facing multiple challenges of drought, backlogs in potable water supply, poor sanitation in schools and households, and dealing with the human waste (sludge) from the only waste water treatment plant located in KwaDukuza local municipality. The district also gets water from Umgeni Water located in the nearby city of Durban. The region received a limited fraction of the provincial government relief support in response to the droughts of 2016/17 financial year. However, most of the investment went to hiring water tankers to distribute water and setting up communal UV resistant polyethylene storage tanks (commonly known as Jojo tanks).

As commonly observed in most parts of the country by the national Department of Water and Sanitation, infrastructure in iLembe District Municipality is aging and poorly maintained. Hence episodes of pipe bursts and leakages, in concert with theft and vandalism of the infrastructure, are prevalent throughout the district. A lot of non-revenue potable water is lost annually, and the situation is worsened by episodes of drought. One of the recent worst droughts was in 2014, when KwaZulu-Natal was declared a disaster area; drought conditions are still persisting in the iLembe District Municipality⁴.

Towards archiving the objective of addressing potable water shortages, drought and sanitation backlogs across the four local municipalities in the iLembe district (i.e. Mandeni, KwaDukuza, Maphumulo and Ndwedwe), iLembe District Municipality has developed an Integrated Development Plan, intended to be phased in between 2017 – 2022, at an estimated to cost of about **R 1,283,580,681.00**. The iLembe district is raising funds to implement the Regional Bulk Water Supply scheme across the following areas:

- **The Ndulinde Sub-Regional Water Supply Scheme** fall within wards 5, 6, 11, 12, 16 and 17 of Mandeni Local Municipality.
- **The Macambini Sub-Regional Water Supply Scheme** fall within wards 1, 2, 3, 8 and 9 of Mandeni Local Municipality.

⁴ iLembe District Municipality's Integrated Development Plan 2017 – 2022.

- **The Inyoni Housing Bulk Water and Sanitation Project** falls within ward 10 of Mandeni Local Municipality.
- **The Lower Thukela Regional Bulk Water Scheme** is intended to serve the area of KwaDukuza with potable water supply.
- **The Groutville D Household Sanitation Project** is aimed at providing waterborne sanitation to Chris Hani, Lloyds, Ntshawini, Mnyundwini, Etsheni and Njekane areas within KwaDukuza Local Municipality.
- **The Southern Regional Bulk Water and Sanitation Project** is aimed at upgrading the existing bulk water and sanitation bulk and reticulation services to Nkobongo, Shayamoya, Shaka's Head and Etete townships.
- **The proposed Umshwati Bulk Pipeline** will be implemented in partnership with Umgeni Water to augment the water supply to Ndwedwe Ozwathini area that is currently being served through borehole supply. These areas fall within wards 4, 5, 6, 8, and 9 of Ndwedwe Local Municipality.
- **The Balcome/KwaSizabantu Sub-Regional Water Supply Scheme** falls within Maphumulo Local Municipality of iLembe DM area. The water scheme will cover wards 3, 5 and 6 of Maphumulo Local Municipality with potable water supply at a level of house connections.
- **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 yard connections. The scheme will cover wards 4, 7, 8, 9, 10 and 11 of Maphumulo Local Municipality and ward 1, 2, 3, 4 and 7 of Ndwedwe Local Municipality.

The iLembe District Municipality still has challenges in terms of the maintenance of the Regional Bulk Water Supply Scheme. Hence a project on reducing (water) system leakages is an integral

part for the Regional Bulk Water Scheme programme articulated in the iLembe's Integrated Development Plan (2017 – 2022).

Relationship to the country's sustainable development priorities

In its Nationally Determined Contribution to the UNFCCC, South Africa has communicated its vulnerability to water and food security. Between 2010 and 2015, the country has invested between US\$ 0.17 bn and US\$ 0.59 bn in the water sector⁵. However, the need for water keeps increasing as a result of socio-economic growth and development⁶. Based on human population statistics presented in the iLembe District Municipality's Integrated Development Plan (2017 – 2022), the current highest water demand projection in the iLembe District is from the KwaDukuza local municipality (58.42 ml/day); followed by Mandeni local municipality (29.83 ml/day); then Ndwedwe local municipality (15.26 ml/day); and finally Maphumulo local municipality (7.58 ml/day). During the 5 years of implementation of the Integrated Development Plan (2017 – 2022), the iLembe District Municipality will roll out the Regional Bulk Water Supply Scheme⁷ for the region. The scheme is intended to supply communities largely dependent of bore water holes, and will also be a means of drought relief and addressing the sanitation challenges in the region. Nevertheless, a project is needed to reduce systems leakages as part of maintaining the Regional Bulk Water Supply infrastructure and the local municipalities' supply networks.

The use of hydraulic leak detectors to curb underground water leaks is common around the world especially in developed countries. Although the technology is relatively expensive especially for poorer district municipalities like iLembe, an investment in the hydraulic leaks detection, would help reduce the financial, labour and time costs for detecting leaks as part of water management. This technology will enable the iLembe District Municipality to achieve the following objectives:

- Locate damaged water pipes (above and belowground) as part of implementing the national 'war on leaks' program at regional/local level.
- Create an automated water supply/management system within the iLembe water works.

⁵ South Africa's Intended Nationally Determined Contribution (INDC)

⁶ A National Climate Change Response Strategy for South Africa (2011)

⁷ A flagship programme for the water sector to address potable water supply and sanitation challenges in the district.

- Capacity development and job creation.
- Raise awareness on the impacts of water loss through leakages.

Barriers to dissemination and measures

In summary, key barriers to the technology dissemination are as follows:

- 1) High costs
 - 2) Low knowledge of the technology and competency level
 - 3) Lack of incentive-based mechanisms and community awareness campaigns
- *Affordability*: leak detection equipment is expensive and not always affordable for municipalities. Replacement costs for detector heads are high. Hence the iLembe District Municipality should put together a proposal to the provincial government to invest in the leakage detector systems;
 - *Unqualified staff*: tertiary institutions such as the Umfolozi TVET (technical and vocational education and training) College should be encouraged and supported to introduce modules in training plumbers and other water technicians. The tender process to appoint service providers should also be more transparent;
 - *Poor planning and lack of management*: the iLembe District Municipality needs to develop a programme to replace old infrastructure in line with its Integrated Development Plan;
 - *Topography*: with its steep hills and mountains, KwaZulu-Natal may be a challenging area to implement a 'one-size fits all solution'. Research and development may provide site-specific solutions. Therefore, Terms of Reference need to be developed for a scoping study;
 - *Prepaid water metering system*: the primary challenge may be around changing people's perspectives in how they use potable water and how much they need. Incentives are needed for efficient water use, such as free monthly kiloliters of water

in concert with reliable monitoring by municipalities. Theft and vandalism remain major challenges facing local authorities.

Preliminary Technology Targets and Ambition of Concept

The project is proposed to be region-wide – targeting municipalities where water leakages or losses of none-revenue water are exceptionally high. The project would be implemented in four municipalities (KwaDukuza, Maphumulo, Mandeni, and Ndwedwe) with the following objectives: replacement of 50 leaking taps, inspection of 10km of pipes, installation of 10 detection heads, installation of meters in 10 households in each municipality (40 households in total). At least one functional automated water supply/management system will be setup at the iLembe water works. The water supply networks will need to be well understood across the region in order to plan the efficient use of the hydraulic leak detection units. The key lessons learned from the iLembe District Municipality will be replicated throughout the province of KwaZulu-Natal with the assistance of key stakeholders such as KZN’s Economic Development, Tourism and Environmental Affairs Department, as well as Trade and Investment KwaZulu-Natal.

Project Concept

The activities in this action plan can be divided under four action categories:

Action 1: Planning

- Activity 1: Development of terms of reference for external contractual parties in the project
- Activity 2: Identification of sites and assessment of technology requirements

Action 2: Implementation (installation)

- Activity 1: Procurement of equipment and inspection services
- Activity 2: Installation of equipment and inspection carried out
- Activity 3: Provision of annual equipment maintenance

Action 3: Training and engagement of stakeholders

- Activity 1: Procurement of training services
- Activity 2: Training of staff to improve water meters reading

- Activity 3: Training of locally based plumbers and artisans
- Activity 4: Introduce employment programme

Action 4: Communication and outreach

- Activity 1: Terms of reference for outreach programme
- Activity 2: Identification of agencies to implement outreach
- Activity 3: Outreach implementation (awareness training for community)

Outputs

OUTPUT 1: Terms of Reference prepared for an economic feasibility and sustainability study for equipping each local municipality in the iLembe District Municipality with hydraulic leak detector/s suitable for their environment.

OUTPUT 2: An integrated water management system for the iLembe District, which includes an automated water supply/management system within the iLembe water works, developed.

OUTPUT 3: Resources mobilised for local production of parts/components of the water infrastructure in the region. This includes advocacy for the establishment of public-private partnerships.

OUTPUT 4: iLembe District Municipality support in the planning of the integration of the reducing systems leakage technology to the Regional Bulk Water Supply Scheme. This will include issues of maintenance and replacement of aging infrastructure with more durable materials that take into account larger volumes of water to be distributed to a growing population.

OUTPUT 5: Workshops and meetings of authorities across the district to assess the efficacy of the technology (reducing systems leakages) in view of the plans articulated in the Integrated Development Plan (IDP). This may include a review of where such resources are most needed; assist with the budgetary processes and the review of the IDP.

Key Risks and Mitigation measures

The key risk for the technology are in ensuring that the technology is utilized to its full potential with minimal downtime. Lack of proper O&M can reduce the technology effectiveness and life span. This means that the end users and designated persons in households and public bodies are trained in an effective manner to ensure that the post-installation operations and regular maintenance is carried out with ease. To mitigate this risk, the municipal body has to ensure that users get relevant training for operating and maintaining the equipment in the long run. Inadequate or ineffective training can pose substantial risk to the operation of the equipment. In addition, the municipality has to ensure that procurement guidelines to include a provision of periodical equipment maintenance service from the suppliers. This also provides an alternative to users to have technical support in case they cannot manage the maintenance. The municipal body will also have to make provision for feedback from end users so that the users can provide feedback on the technology, on training and its relevance in maintaining the equipment and on the service level of the equipment provider. Municipality will nevertheless also have to keep in mind the minor risks listed in project concept table.

Budget

The details of cost assessment for every activity is presented (in local currency) in the concept table along with the working notes for each cost assessment. In the table below, we provide and action wise overview of the concept in the local currency and also in US dollars (1 USD = 12.5 ZAR). These costs are only presented from the municipality's perspective, therefore do not include the incidental costs that other stakeholders such as the end users occur.

Action	Total Budget ZAR	Total Budget USD @ 12.5
Action 1: Planning 1+2	20,454 + 45,510 = 65,964	5277
Action 2: Training and stakeholder engagement 3+4+5	20,454 + 262,820 = 283,274	22,662
Action 3: Implementation (installation) 6+7+8+9	21,120 + 73,344 + 56,320 + 70,400 = 221,184	17,695

Action 4: Communication and outreach 10+11+12	12,672 + 30,000 + 132,000 = 174,672	13,974
Total	ZAR 745,094	USD 59,608*

* This does not include the costs of repairs since it cannot be estimated at this stage – it needs to be added on later

Beneficiaries and Impacts

The project is estimated to directly target 240 beneficiaries (6 per household in 40 households). These are immediate beneficiaries of meters installation in households. Repairs of pipes and installation of leak detectors on the overall system will improve access to water for the inhabitants in the four municipalities. The project will have long term impact on the following:

Local municipalities

- Management and reduction of debt to the district municipality, Umgeni water, etc.
- Effective management of water-borne diseases. Reduced chances of pathogens breeding by preventing water stagnation in public areas.
- Push-back of ‘day zero’ for pipes not to run dry.

All communities, particularly those in low cost housing projects:

- Reduced fresh water costs to municipalities.
- Possible increase in free water allocation.
- Water allocation to schools and communities to address the sanitation backlogs.

Private sector shall also benefit from the manufacturing, distribution and installation of site specific hydraulic leak detectors, considering the steep hilly topography on inland iLembe;

- Job creation in the region.
- Setting up manufacturing and distribution plants for local and international markets.

Environmental benefits;

- Reduction of soil erosion.
- Stabilisation of water tables.
- Reduced contamination of aquifers.

Sector	Water						
Sub- sector	Reducing water systems leakages						
Technology	Automated water supply/management system and repair of water systems						
Ambition	Replace 50 leaking taps, inspection of 10km of pipes, install 10 detection heads, install meters in 10 households in each municipality (40 households in total). Implementation in four municipalities [KwaDukuza, Maphumulo, Mandeni, and Ndwedwe]						
Benefits	1) Water availability for consumption 2) promotion of health and sanitation 3) savings for municipality to provide water						
Action	Activities	Responsible body	Time frame⁸	Risks & Mitigation	Success Criteria	M&I Indicators	Budget R
1. Planning	Development of terms of reference for external contractual parties in the project	Department of water works, iLembe municipality	2	Comprehensiveness of the TORs Consult experts to ensure all-encompassing TORs	At least 3 applicants to the bid	Terms of reference for external contractual parties in the project developed and advertised.	20,454 WN 1
	Identification of sites and assessment of technology requirements	Department of water works, iLembe municipality	3	Scale of repairs needed underestimated. Adequate site visits coupled with local consultations will ensure suitable sites are chosen and technology requirements are assessed properly.	---	Installation sites identified	45,510 WN 2
ACTION 1 TOTAL				ZAR 65,964 / USD 5277			
2. Implementation (installation)	Procurement of equipment and inspection services	Department of water works, iLembe municipality;	3	Equipment price is difficult to estimate without TORs and result of technology requirements	---	All services required for inspection	20,454 WN 3

⁸ months

				assessment (i.e current state of pipes or existing infrastructure). This is a low risk activity. Following standard procurement procedures will ensure the right equipment is procured.		are procured	
	Installation of equipment and inspection	Department of water works, iLembe municipality; Private equipment suppliers	6	Additional structural changes required for installation. More of the piping infrastructure might have to be replaced depending on results of the inspection. This is very likely and therefore should be budgeted for; however, inputs from private suppliers while identifying sites will bring to light an overall picture of specific installation requirements.	---	Equipment is installed and ready to use at all the identified sites.	262,820 WN 4
	Provision of annual equipment maintenance	Department of water works, iLembe municipality; Private equipment suppliers	Og	Local plumbers and artisans are uninterested or unable to offer adequate maintenance. Planned training for local plumbers and artisans accompanied with employment programme.	At least 90% of trained artisans and plumbers can perform maintenance after training	Annual maintenance is performed as scheduled	0 See WN 5
ACTION 2 TOTAL				ZAR 283,274 / USD 22,662			
3. Training and engagement of stakeholders	Procurement of training services	Department of water works, iLembe municipality;	2	Inadequate procurement process and ineffective training. This risk will be mitigated by clearly defined TORs developed during the planning phase.		Training services required are procured	21,120 WN 6

	Training programme for staff to improve water meters reading	Department of water works, iLembe municipality; Private equipment suppliers	4	Inadequate or ineffective training. This can pose substantial risk to the operation of the equipment. The training programme must be closely monitored by the iLembe municipality to ensure users are provided with adequate and effective training.	At least 90% of staff can perform the tasks on which they are trained on after training	Training module for staff is designed and implemented.	73,344 WN 7
	Training of locally based plumbers and artisans	Department of water works, iLembe municipality; Private suppliers who could provide the trainings	6	Local actors are uninterested in the training programme. The training will be part of a broader employment programme and should be coupled with adequate communication and incentivization.	At least 90% of trained artisans and plumbers can perform maintenance after training	Training module for plumbers and artisans is designed and implemented.	56,320 WN 8
	Introduce an employment programme	Department of water works, iLembe municipality; Local technical university	<i>6 months to set it up Og⁹</i>	The employment programme lacks support/funding and is not sustained over time. Well defined TORs for the program and alignment with national war on leaks programme objectives should ensure the relevance of the programme and mitigate these risks.	---	Employment programme is designed and implemented	70,400 WN 9
ACTION 3 TOTAL				ZAR 221,184 / USD 17,695			
4. Communication & Outreach	Terms of reference for outreach programme	Department of water works, iLembe municipality;	2	Comprehensiveness of the TORs Consult experts to ensure all-encompassing TORs	At least 3 applicants to the bid.	Terms of reference for designing and	12,672 WN 10

⁹ Ongoing

						implementing outreach programme developed and advertised.	
	Identification of agencies to implement outreach	Department of water works, iLembe municipality	2	Incompetent outreach agency. Following standard service procurement procedures will ensure the right agencies are identified to design and implement the outreach programme.	--	Implementing agency meeting the selection criteria identified	30,000 WN 11
	Outreach implementation	Department of water works, iLembe municipality; Private equipment suppliers; NGOs; Local stakeholders; Local technical university	Og	Agencies do not implement the outreach activities effectively. This can pose substantial risk to technology deployment in future. Outreach implementation must be closely monitored by the iLembe municipality to ensure wide range of users are covered with an effective programme. Part of this outreach programme would entail awareness raising activities in the communities regarding good practices and water usage.	Outreach programme reaches at least 300,000 people	Outreach programme successfully implemented	132,000 WN 12
ACTION 4 TOTAL				ZAR 174,672 / USD 13,974			
TOTAL BUDGET				ZAR 745,094 / USD 59,608			

Working notes on cost and savings assumptions:

#	Cost Calculation	Assumptions	References
1	<p>Number of persons: 5 Work Days: 3 Hourly wage: 30,000/(22*8) Total hours: 5*3*8</p> <p>Total Activity budget ≈ 20454</p>	<p>Minimum wage rate is 2933 per month for workers (rounded to 3000). It is assumed that the average minimum wage for experience iLembe municipality staff is 10 times this rate i.e. 30,000 p.m.</p> <p>Number of working days in a month 22. Working hours per day 8.</p>	<p>Minimum wage rates for SA: https://mywage.co.za/main/salary/minimum-wages</p>
2	<p>Number of persons: 4 Travel days: 2*4 = 8 Additional Staff Days = 2 * 4 = 8</p> <p>HR Expenses = (8/22) * 30,000 = 10,910</p> <p>Total trip Expenditure: 7900 * 4 = 31,600 Mapping Expenditure: 3000 approx.</p> <p>Total Activity budget ≈ 10910 + 31600 + 3000 = 45510</p>	<p>Site visits: 4 Total distance: 150 kms per trip (based on departure from Ilembe to each municipality and around) Fuel efficiency: 11km/l Gasoline: 14 lit @ 50 = 700 per trip Personnel: 3000 per trip</p> <p>DA: 397 +128 = 525 + Mark up 100% = 1050 per trip</p> <p>Trip expenditure = fuel + personnel + DA = 700 + 3000 + 4*1050 = 7900</p>	<p>Area of iLembe: 3269 sq. km.</p> <p>Cost of living numbers https://www.numbeo.com/cost-of-living/country_result.jsp?country=South+Africa</p> <p>Daily Allowance http://www.sars.gov.za/Tax-Rates/Employers/Pages/Subsistence-Allowances-and-Advances.aspx</p>
3	<p>Number of persons: 5 Work Days: 5 Hourly wage: 30,000/(22*8) Total hours: 5*1*8</p> <p>Total Activity budget ≈ 20,454</p>	<p>Includes tender floating time</p>	<p>Minimum wage rates for SA: https://mywage.co.za/main/salary/minimum-wages</p>
4	<p>Total capital expenditure</p> <p>Inspection: Number of days*11000+ Number of overnight stays*1300 = 61500</p> <p>Taps replacement: 500 * 50 = 25000</p>	<p><u>Inspection of 10km pipes:</u> approx. R 11000 per day (excl. VAT) + overnight stay for workers (5*1300) = R 61,500</p> <p>The cost of repairs will have to be added but cannot be estimated without inspection.</p>	<p>Inspection of pipes: http://leakdetection.co.za/Cost-of-leak-detection/</p> <p>Taps: https://www.pricheck.co.za/search</p>

	<p>Detection heads: Unknown number</p> <p>Meters: $3000 * 40 = 120,000$</p> <p>Additional staff time: Number of persons: 2 Work Days: 20 (5 per municipality) Hourly wage: $30,000/(22*8)$ Total hours: $20*2*8$</p> <p>Total cost $\approx 56,320$</p> <p>Total Activity budget $\approx 262,820$ (excluding detector heads and repairs costs)</p>	<p><u>Taps (50)</u>: depending on type of taps but for the sake of estimation we assume average price of 500R per piece.</p> <p><u>Detection heads:</u> Unknown at the moment</p> <p><u>Meters (40)</u>: depending on the technology – but for the sake of estimating, we assume 3000 R per piece.</p> <p><u>Additional components:</u> <i>Automatization of the whole system could be considered and discussed at the procurement stage. This could entail modernization of hardware and software. To be defined by Municipality in collaboration with service and equipment providers.</i></p>	<p>ch?search=kitchen+taps</p> <p>Meters: depends on the type. See for example: https://assuredaution.com/W/M/residential-water-meter-price-list.php</p> <p>Detection heads:</p>
5	No cost estimate. See WN 6 and WN 8	<p>This activity should be considered as part of the employment programme and training to local plumbers and artisans, who will be called upon to provide maintenance.</p> <p>Therefore, no cost estimates can be made separately for this component. The cost to the municipality will be detailed in WN 6 and WN 8 (procurement of training services and provision of trainings to local plumbers and artisans)</p>	
6	<p>Number of persons: 3 Work Days: 5 Hourly wage: $30,000/(22*8)$ Total hours: $3*5*8$</p> <p>Total Activity budget $\approx 21,120$</p>	<p>Minimum wage rate is 2933 per month for workers (rounded to 3000). It is assumed that the average minimum wage for experience iLembe municipality staff is 10 times this rate i.e. 30,000 p.m.</p> <p>Number of working days in a month 22. Working hours per day 8.</p>	<p>Minimum wage rates for SA: https://mywage.co.za/main/salary/minimum-wages</p>
7	<p>Number of trainings in each municipality (one full day): $2 * 4 = 8$ Room rental expenditure: $8 * 1500 = 12,000$ Catering: $30 * 150 * 8 \approx 36,000$ Number of trainers: 2</p>	<p>Here it is assumed that the trainings would be given by the Department of Water works in collaboration with I Lembe Municipality and limited involvement of private equipment suppliers.</p> <p>Training meetings held in each municipality: 2 per municipality Room rental: 1500 per day</p>	<p>Minimum wage rates for SA: https://mywage.co.za/main/salary/minimum-wages</p> <p>Cost of living numbers</p>

	<p>Trainers time cost: $2 * 8 * 9 * [30000/(22*8)] = 25,344$ Estimating 1 day prep time for training</p> <p>Total activity budget ≈ 73,344</p>	<p>Catering for training day: 150 per person, estimate 30 people per training Trainers: $30000/(22*8) = 170$ per hour</p>	<p>https://www.numbeo.com/cost-of-living/country_result.jsp?country=South+Africa</p>
8	<p>Number of persons: 2 Work Days: 20 (over six months) Hourly wage: $30,000/(22*8)$ Total hours: $20*2*8$</p> <p>Total Activity budget ≈ 56,320</p>	<p>Full cost estimates can only be done after having designed the training programme. At this stage, it only includes staff time from the municipality to manage the training programme over a six month period.</p> <p>Minimum wage rate is 2933 per month for workers (rounded to 3000). It is assumed that the average minimum wage for experience iLembe municipality staff is 10 times this rate i.e. 30,000 p.m.</p> <p>Number of working days in a month 22. Working hours per day 8.</p>	<p>Minimum wage rates for SA: https://mywage.co.za/main/salary/minimum-wages</p>
9	<p>Number of persons: 5 Work Days: 10 (over six months) Hourly wage: $30,000/(22*8)$ Total hours: $10*5*8$</p> <p>Total Activity budget ≈ 70,400</p>	<p>At this stage, it only includes staff time from the municipality to design the employment programme and set it up in collaboration.</p> <p>Minimum wage rate is 2933 per month for workers (rounded to 3000). It is assumed that the average minimum wage for experience iLembe municipality staff is 10 times this rate i.e. 30,000 p.m.</p> <p>Number of working days in a month 22. Working hours per day 8.</p>	<p>Minimum wage rates for SA: https://mywage.co.za/main/salary/minimum-wages</p>
10	<p>Number of persons: 3 Work Days: 3 Hourly wage: $30,000/(22*8)$ Total hours: $3*3*8$</p> <p>Total Activity budget ≈ 12,672</p>	<p>Minimum wage rate is 2933 per month for workers (rounded to 3000). It is assumed that the average minimum wage for experience iLembe municipality staff is 10 times this rate i.e. 30,000 p.m.</p> <p>Number of working days in a month 22. Working hours per day 8.</p>	<p>Minimum wage rates for SA: https://mywage.co.za/main/salary/minimum-wages</p>
11	<p>Number of persons: 2 Work days: 11 Number of Staff days=22</p> <p>HR Expense=30,000</p>	<p>Identification tasks include finalizing the proposals from shortlisted agencies including negotiations among key stakeholders for roles and responsibilities for implementation of outreach activities and expert consultations.</p>	

	Total Activity budget ≈ 30,000		
12	Outreach budget – 132,000 Total Activity budget ≈ 132,000	<p>Depending on TORs</p> <p>The budget of the outreach programme will depend on the desired scale and intensity of activities within the outreach programme. This would typically depend on municipal finances. The Water Research Commission (WRC), which has committed to R880,000 finances for research and dissemination component to Vivendi’s water project in 2000.</p> <p>Since this project would be part of the broader national War on Leaks programme, we assume that the iLembe municipality would be willing to spend up to 15% of this amount in the current time for outreach and awareness activities. Part of this spending would go to setting up awareness raising activities in the communities regarding good practices and water usage.</p>	

Gantt chart for activities schedule



Project Management

Objective	How will the objective be achieved?	Monitoring and Evaluation
Locate damaged water pipes (above and belowground) as part of implementing the national 'war on leaks' program at regional/local level.	The iLembe District Municipality to pilot the use of hydraulic leak detectors underground; and invest in the training of artisans to fix and replace leaking pipes.	The iLembe District Municipality Department of Water Affairs and Sanitation
Create an automated water supply/management system within the iLembe water works.	The private sector will be engaged to make a contribution to the initiative.	The iLembe District Municipality Department of Water Affairs and Sanitation
Capacity development and job creation.	Workshops and facilitated training programmes to be setup across the district. There should also be a program to absorb trained artisans into full employment of the local municipalities.	The iLembe District Municipality
Raise awareness on the impacts of water loss through leakages.	Effective use of media such as radio and television. Short adverts before news usually have a better impact on the attention of people.	The iLembe District Municipality