

# Water and Sanitation Service Delivery using a Continuous Improvement Approach

Teddy Gounden  
eThekweni Water and Sanitation



Teddy.gounden@durban.gov.za  
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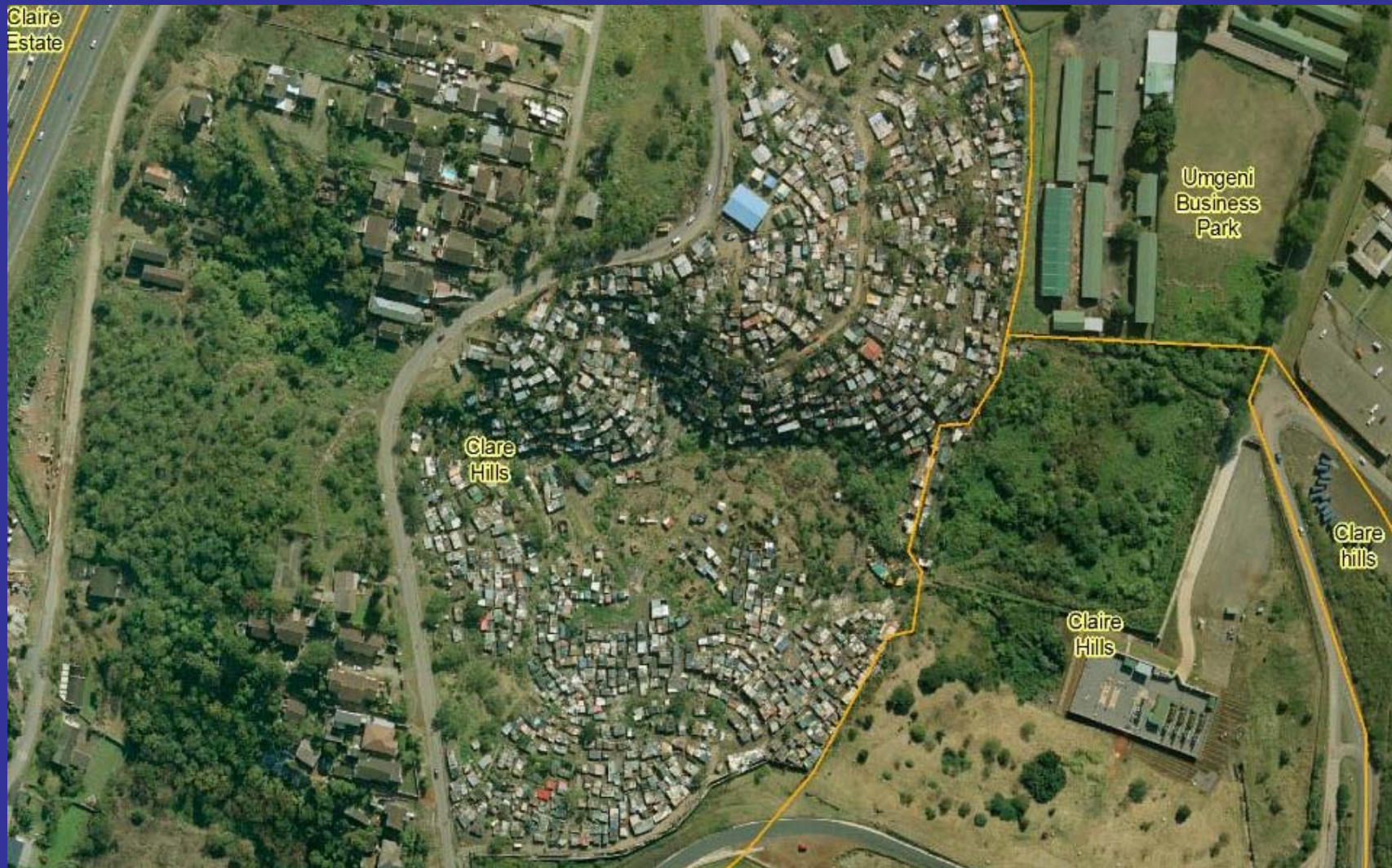
# Durban: City of Contrasts

- First world city with developing country problems
- Informal settlements within 5 km of the City
- Rural areas within 20km of the City



# Challenges: Extensive Inward Migration

## 2008 Orthophoto

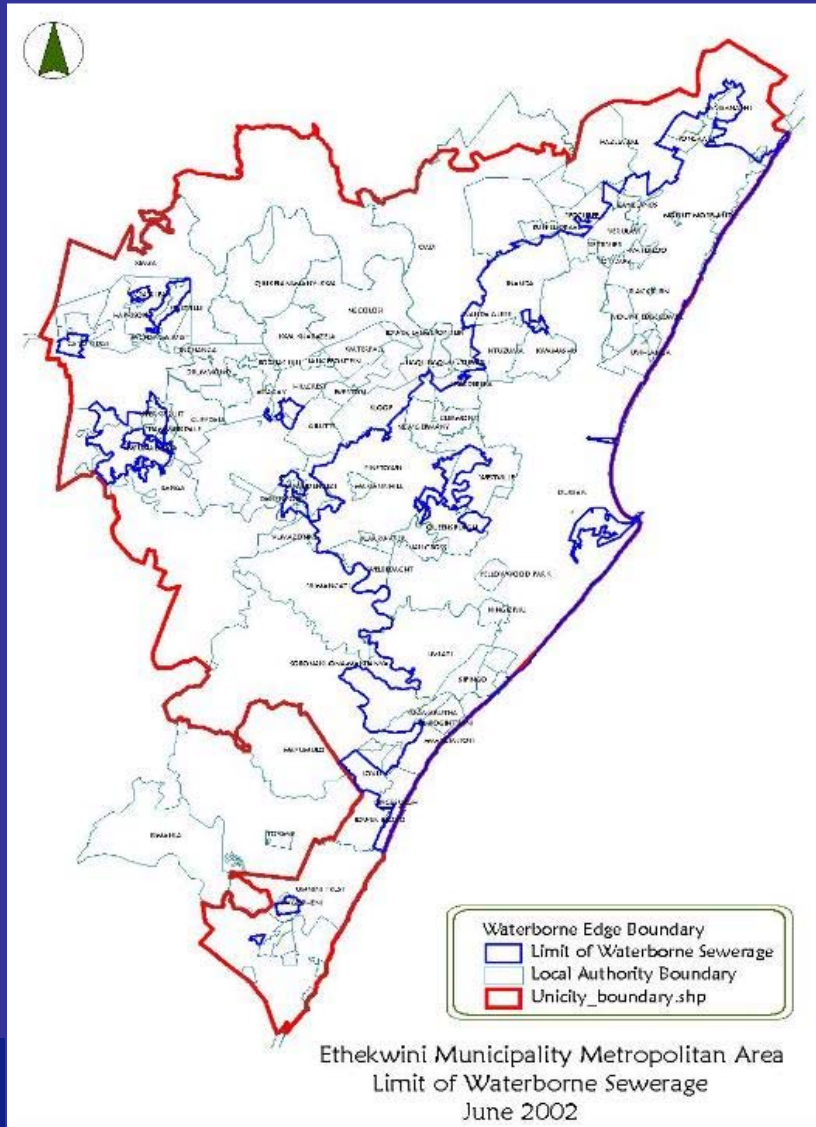


# Challenges: Extensive Inward Migration

## 2013 Orthophoto



# Challenges: Change in Boundaries



- Old Metro 1 366 km<sup>2</sup>
- Unicity 2 300 km<sup>2</sup>
- Population increase:  
2.5m to 3.5mil
- Projected increase  
(2016):  
381 sq km; 125 000  
people

# Challenges: Diverse Customer Base



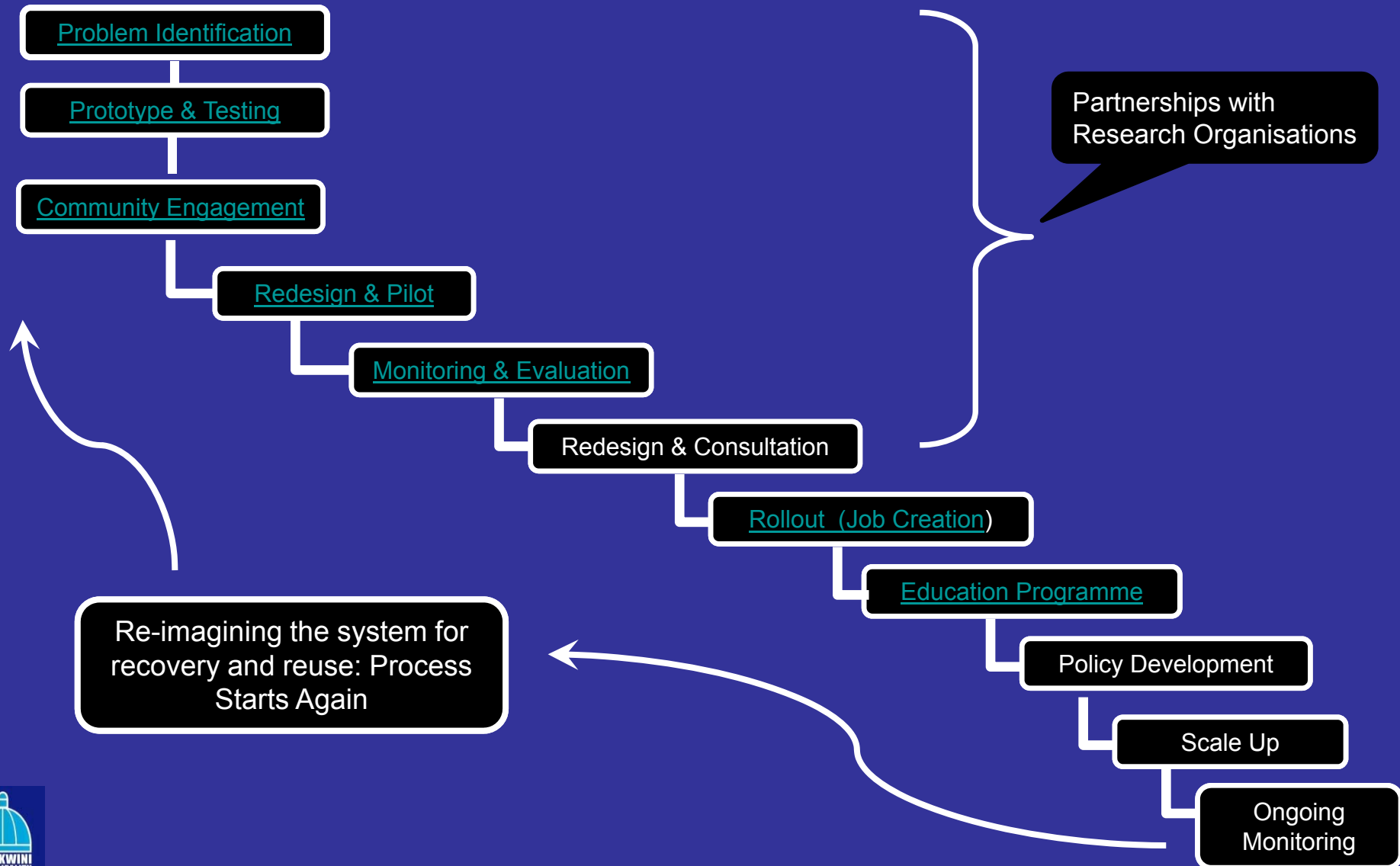
- Rural areas with no roads cadastals or bulk infrastructure
- Dense informal settlements with no services

# Continuous Improvement Approach

- Innovative Solutions
- Services
  - Equitable
  - Environmentally and socially acceptable
  - Financially sustainable
- Research based through partnerships
- Pilot with monitoring and evaluation
- Re-design

# Case Study:

## Urine Diversion Toilets – Implementation Cycle 1





# Problem Identification



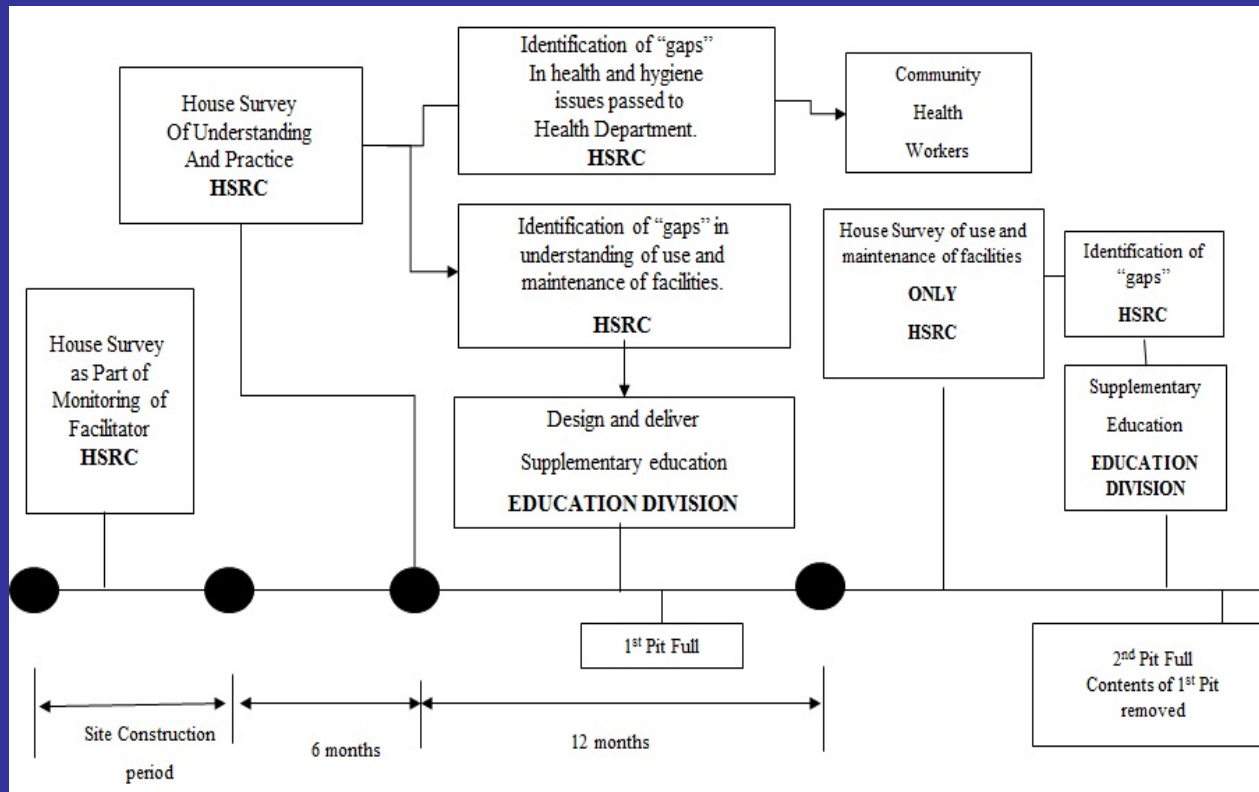
## Prototype and Testing



# Community Engagement



# Monitoring and Evaluation



# Re-Design and Pilot

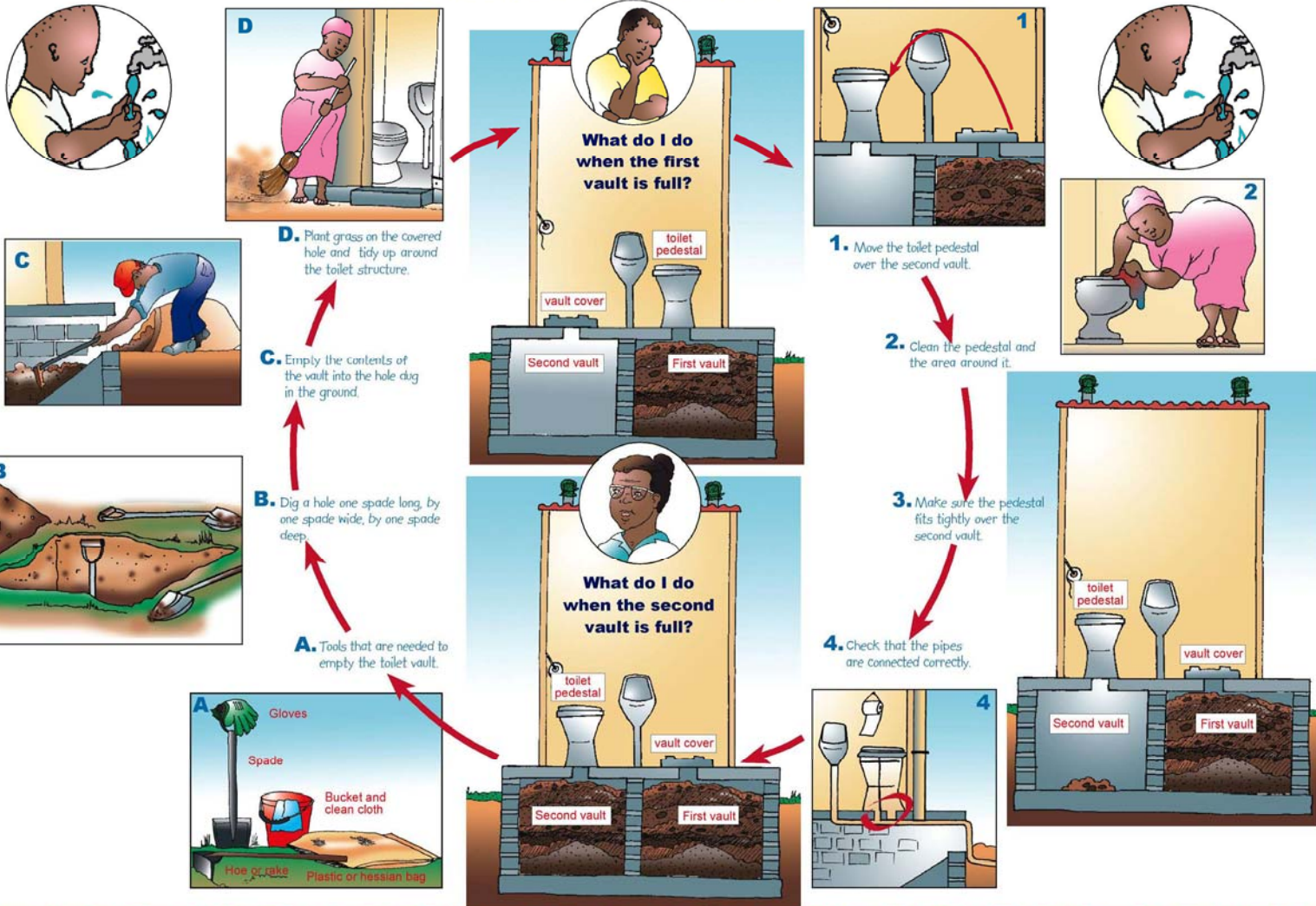


# Rollout – Job Creation



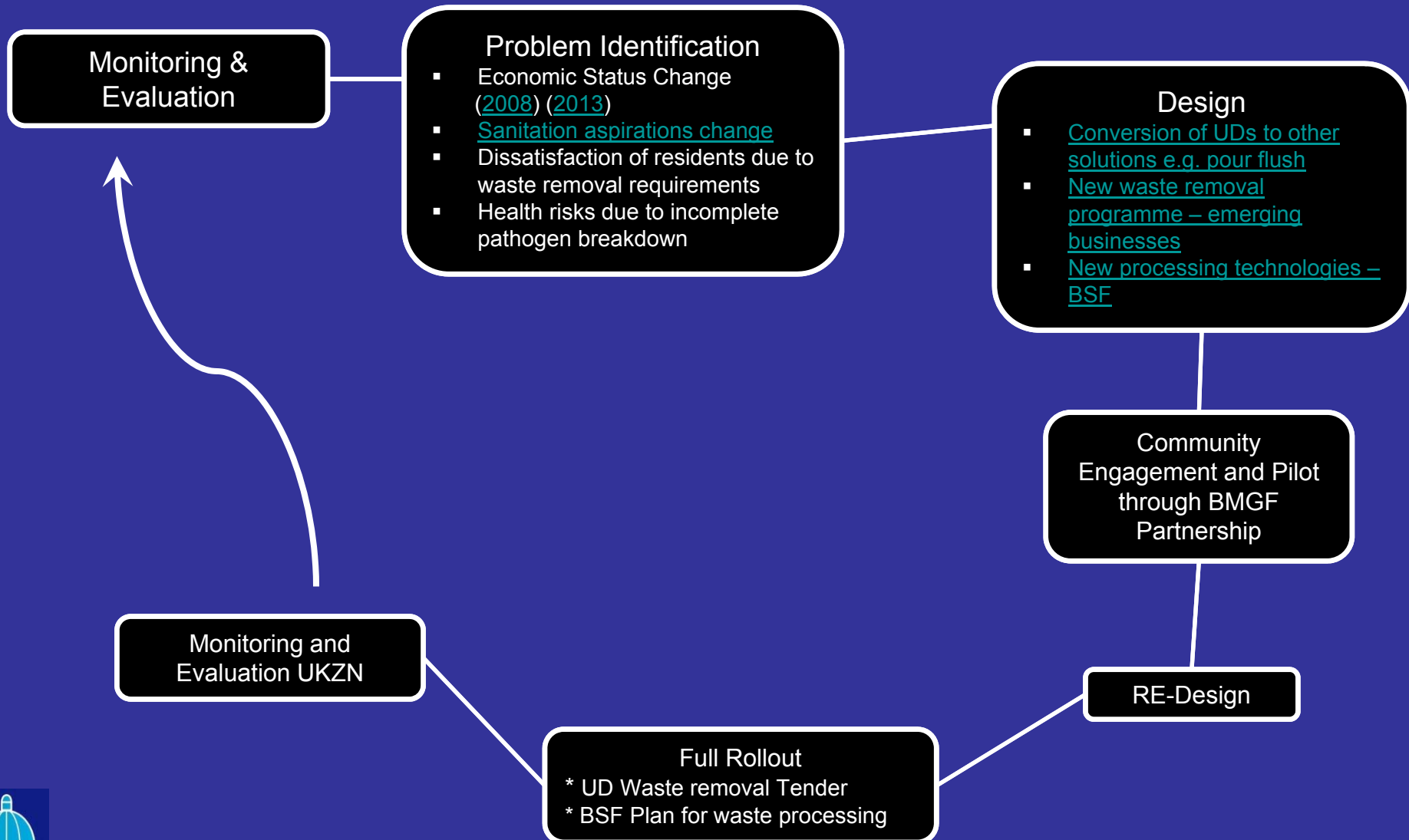
# Education Programme

## HOW TO CHANGE VAULTS AND EMPTY YOUR UD TOILET



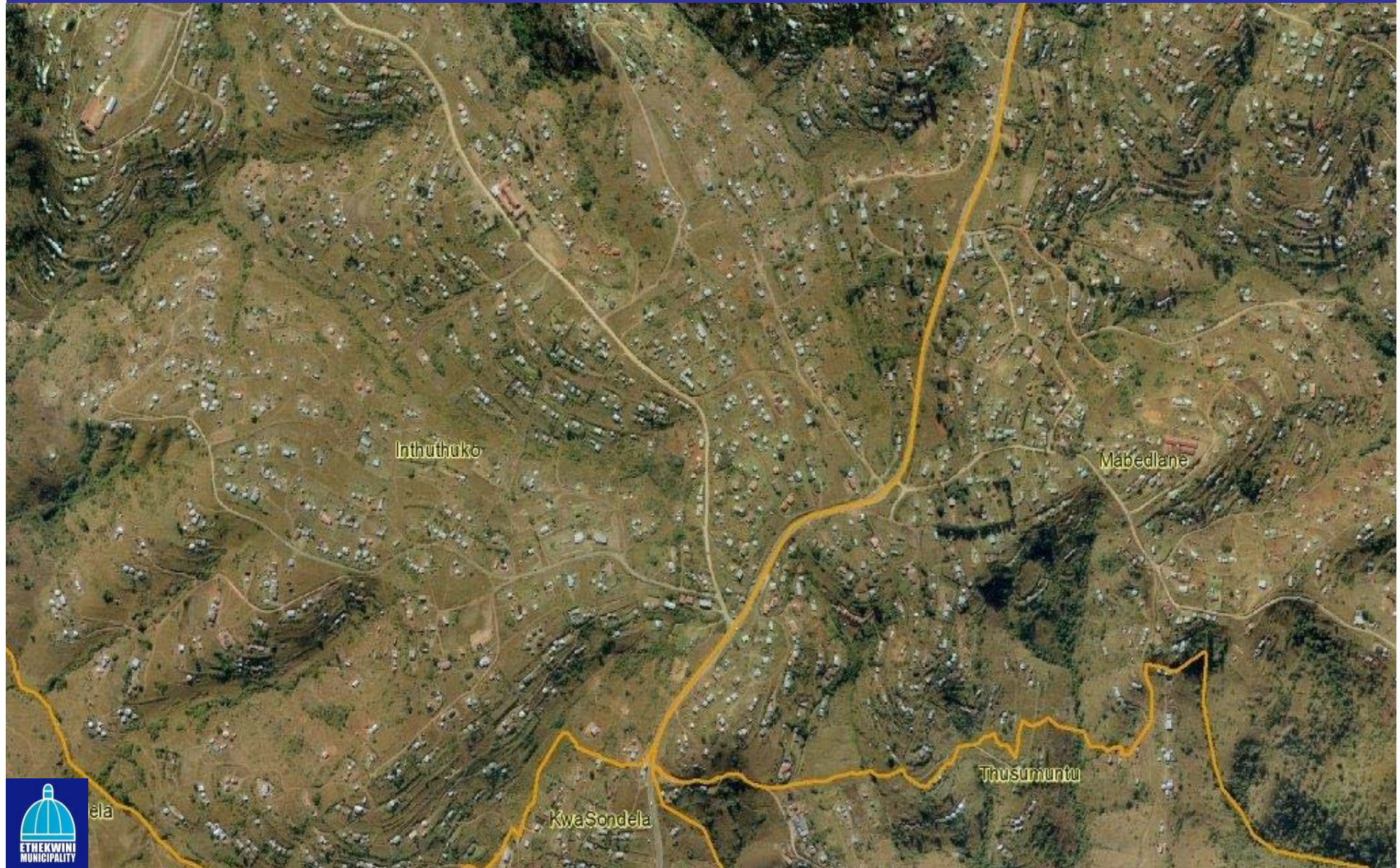
# Case Study:

## Urine Diversion Toilets – Implementation Cycle 2

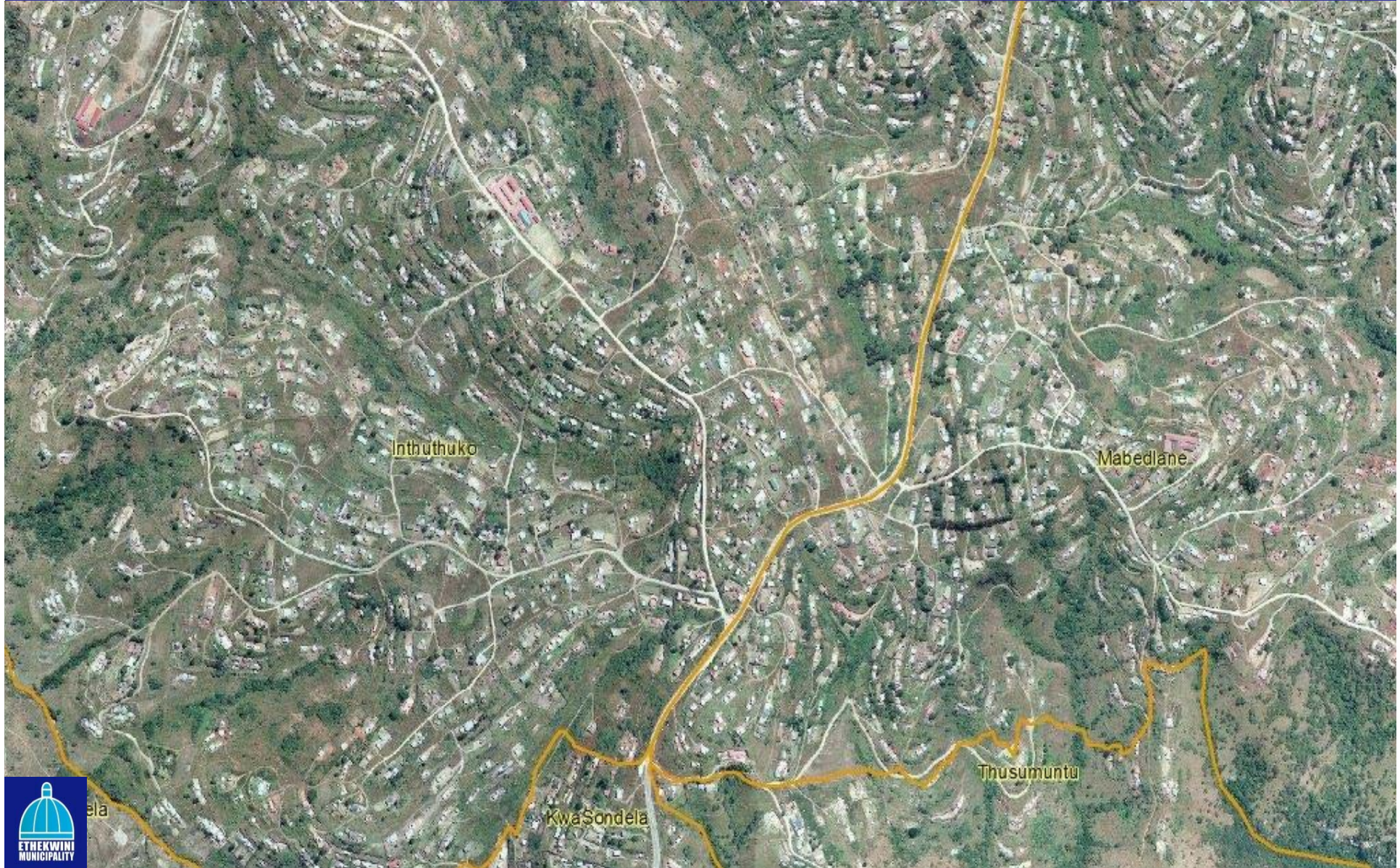




2008



2013



# Sanitation Aspirations Change



## Conversion of UDs to other solutions – e.g. Pour Flush



# New Waste Removal Programmes – Emerging Businesses



# New Processing Technologies - BSF



# CABs



# DEWATS





# Links to Agriculture



# Implementation Process for Various Sanitation Systems

Sanitation System	Rationale	Community Engagement	Results	The Future
VIP Emptying and Processing	<ul style="list-style-type: none"> <li>35 000 VIPs in Durban</li> <li>Disposal of faecal matter a health and environmental hazard</li> </ul>	<ul style="list-style-type: none"> <li>Education on proper use</li> </ul>	<ul style="list-style-type: none"> <li>EWS to empty once every 5 years free of charge</li> <li><a href="#">LaDePa<sup>1</sup> technology developed to process waste</a></li> </ul>	<ul style="list-style-type: none"> <li>Five LaDePa machines to process waste</li> <li>Pellets used as soil amendment or fuel source</li> <li>Development of business model</li> </ul>
Urine Diversion Toilets	<ul style="list-style-type: none"> <li>No more VIPs to be built</li> </ul>	<ul style="list-style-type: none"> <li>Education on proper use</li> <li>Regular user satisfaction surveys undertaken</li> <li>Focus groups created</li> </ul>	<ul style="list-style-type: none"> <li>Over 80 000 installed</li> <li>New designs to improve doors, toilet bowl, odour, etc.</li> <li>Urine collection programme</li> <li>Fertiliser produced from urine</li> <li>Faecal sludge collection programme</li> </ul>	<ul style="list-style-type: none"> <li>Business opportunities for urine processing</li> <li>Black soldier fly processing or faecal waste to produce useful end products</li> <li>Rural affluent, full pressure water linked to DEWATS</li> </ul>
Community Ablution Blocks	<ul style="list-style-type: none"> <li>Dense informal settlements</li> <li>Health of communities</li> </ul>	<ul style="list-style-type: none"> <li>Education on proper use</li> <li>Regular user satisfaction surveys undertaken</li> <li>Use of caretakers to maintain (from community)</li> </ul>	<ul style="list-style-type: none"> <li>Over 1 000 installed</li> <li>New designs to optimise cost and speed delivery (block built, prefabrication, containerised)</li> <li>Linked to sewer</li> <li>Linked to decentralised wastewater treatment systems</li> </ul>	<ul style="list-style-type: none"> <li>Rollout to all informal settlements</li> <li>Outstanding maintenance</li> </ul>

# LaDePa Technology Developed to Process Waste

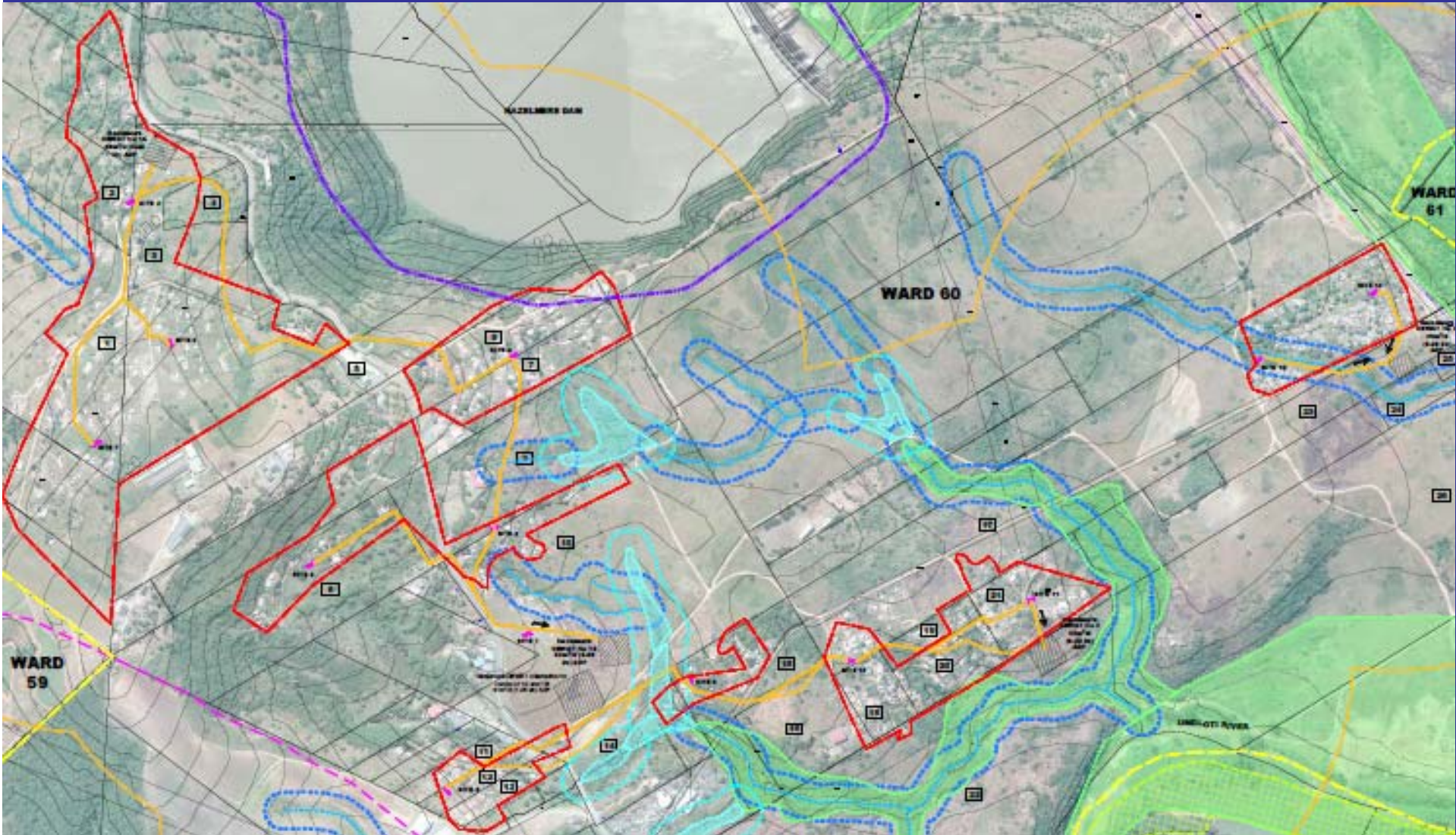


# Continued Improved Approach: Summary of Key Issues

- Continually evolving in a cyclical manner
- Flexible not static
- Research based / monitoring and evaluation
- Open to new appropriate technologies
- Stakeholder engagement for development of trust relationships
- Education and awareness
- Policy development based on implementation and M & E
- Implementation can become more efficient with support from National Government

**THANK YOU**





**WARD 59**

**WARD 60**

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