eThekwini Municipality

Re-use of water via Hazelmere Dam

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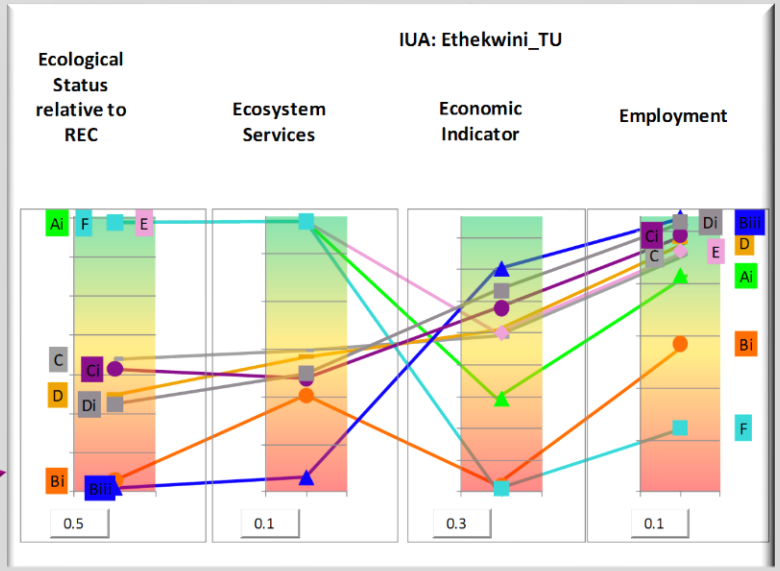
WATER CLASSIFICATION

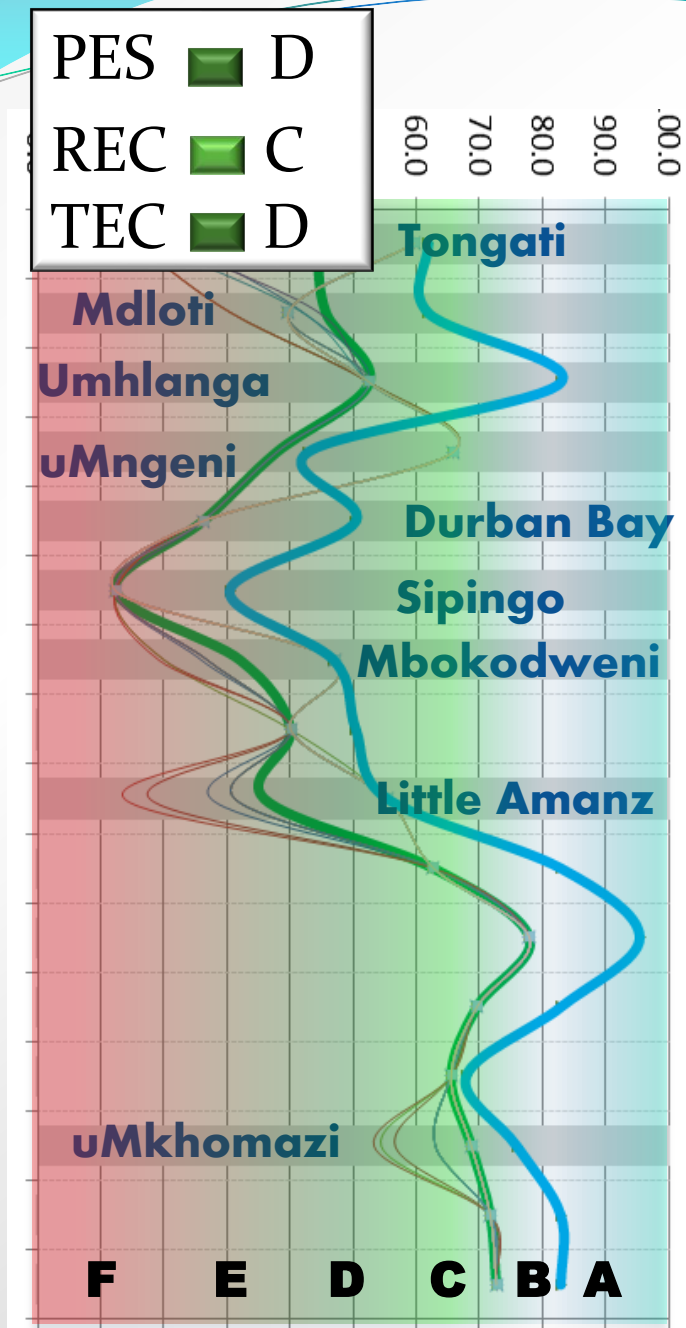
- DWS study – Mvoti to Umzimkulu
- Consortium of consultants (R4A, CSIR, Golder Assts)
- Outcome – water resource class
- Class – define required level of ecological protection
- Regulate the quality and quantity of treated effluent that can be disposed to estuary
- 16 estuaries in eThekwini

Multi-criteria Analysis

- Durban Bay (harbour) : uMngeni are both excluded from this study
- Estuaries Included are :
- North : Ohlanga ; **uMdloti** and **uThongati**
- South : Mbokodweni ; Little aManzimtoti ; **uMkomazi** plus Isipingo lagoon



UMDLOTI WWTW



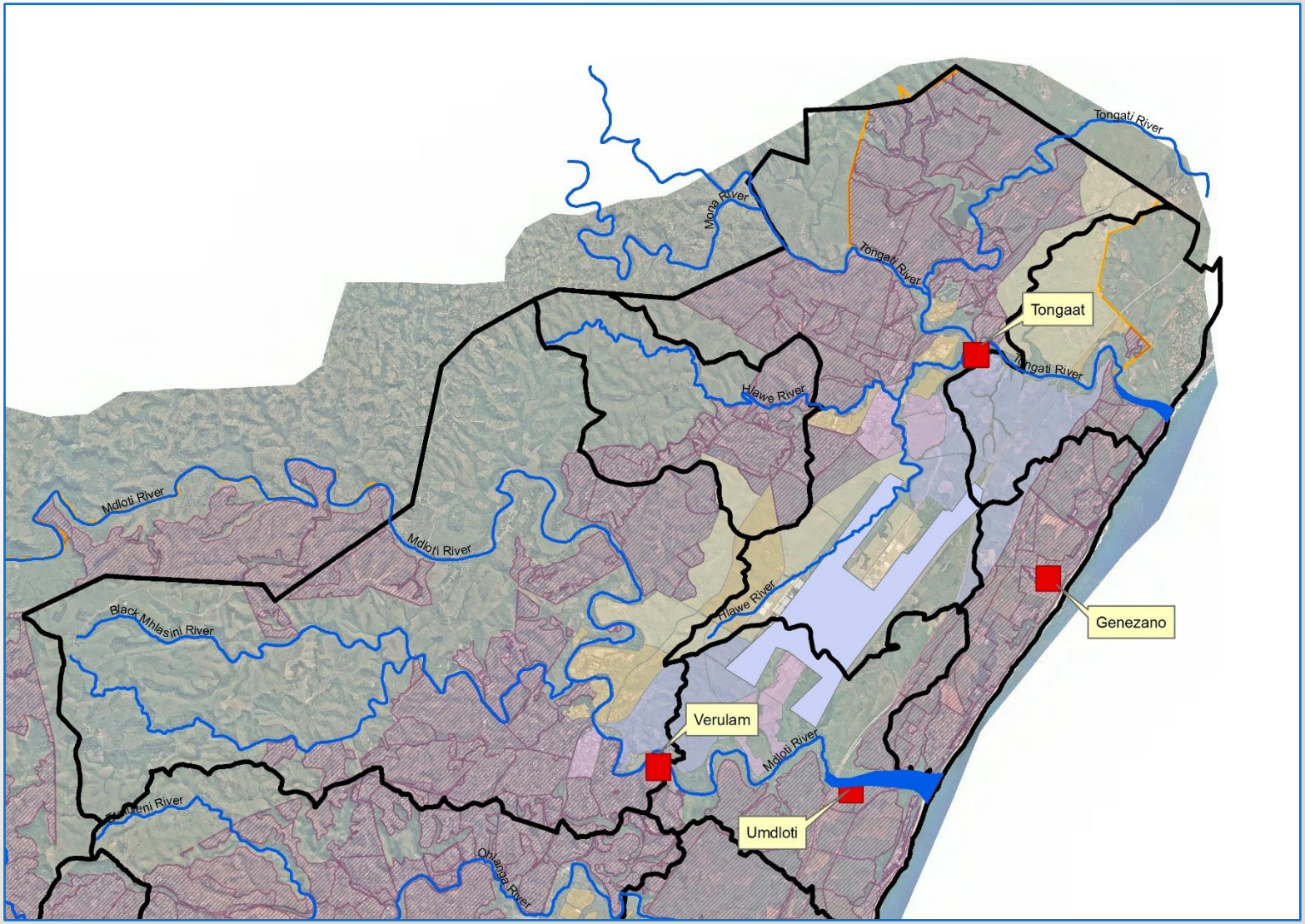
Mdloti

- Do NOT improve if wastewater removed as catchment quality is very poor. More closed = poor O2. Relative insensitive to level of treatment.
- Max discharge to estuary = 50 ML/day
- Ultimate capacity = 125 Ml/day

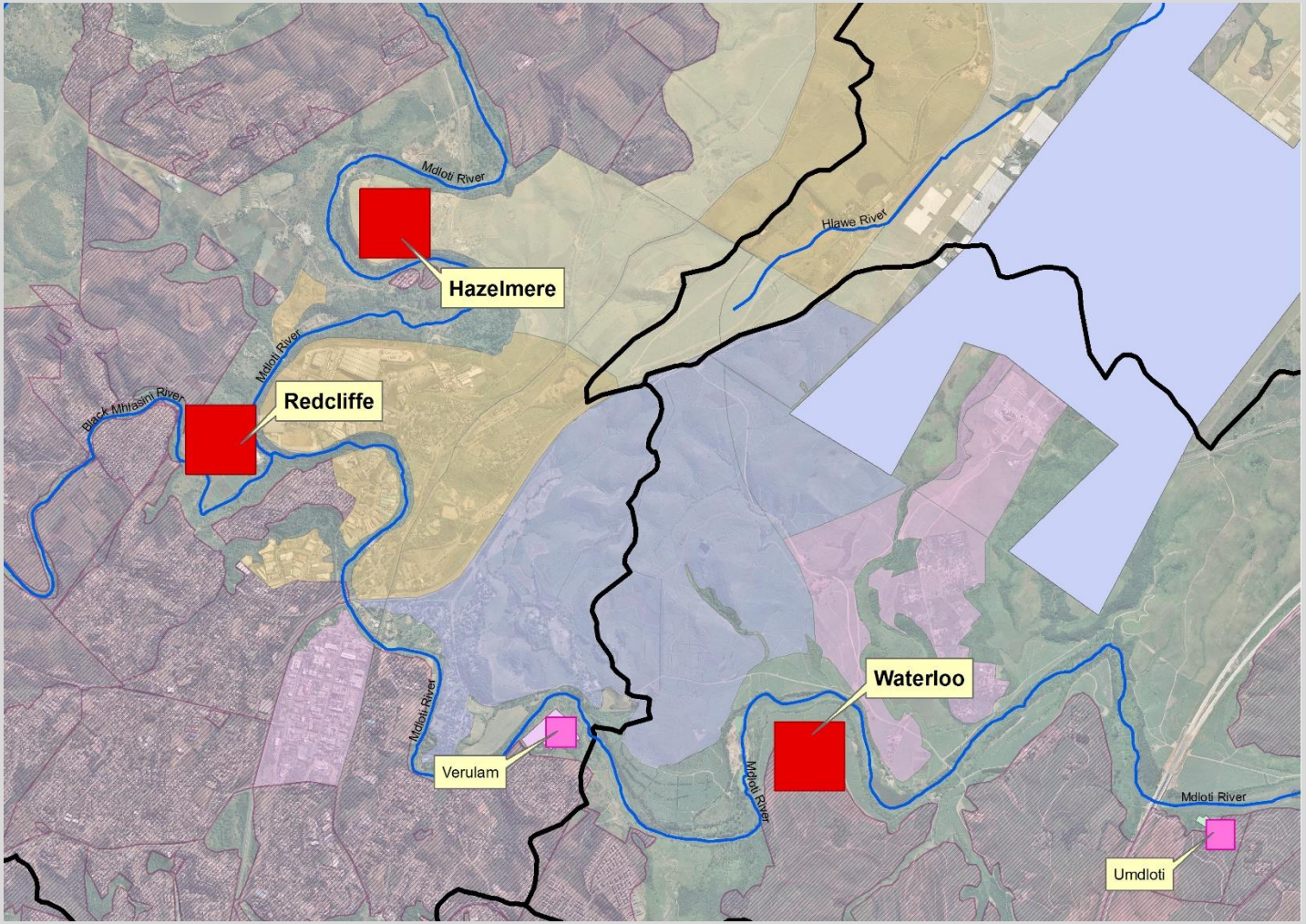
Wastewater effluent discharge options

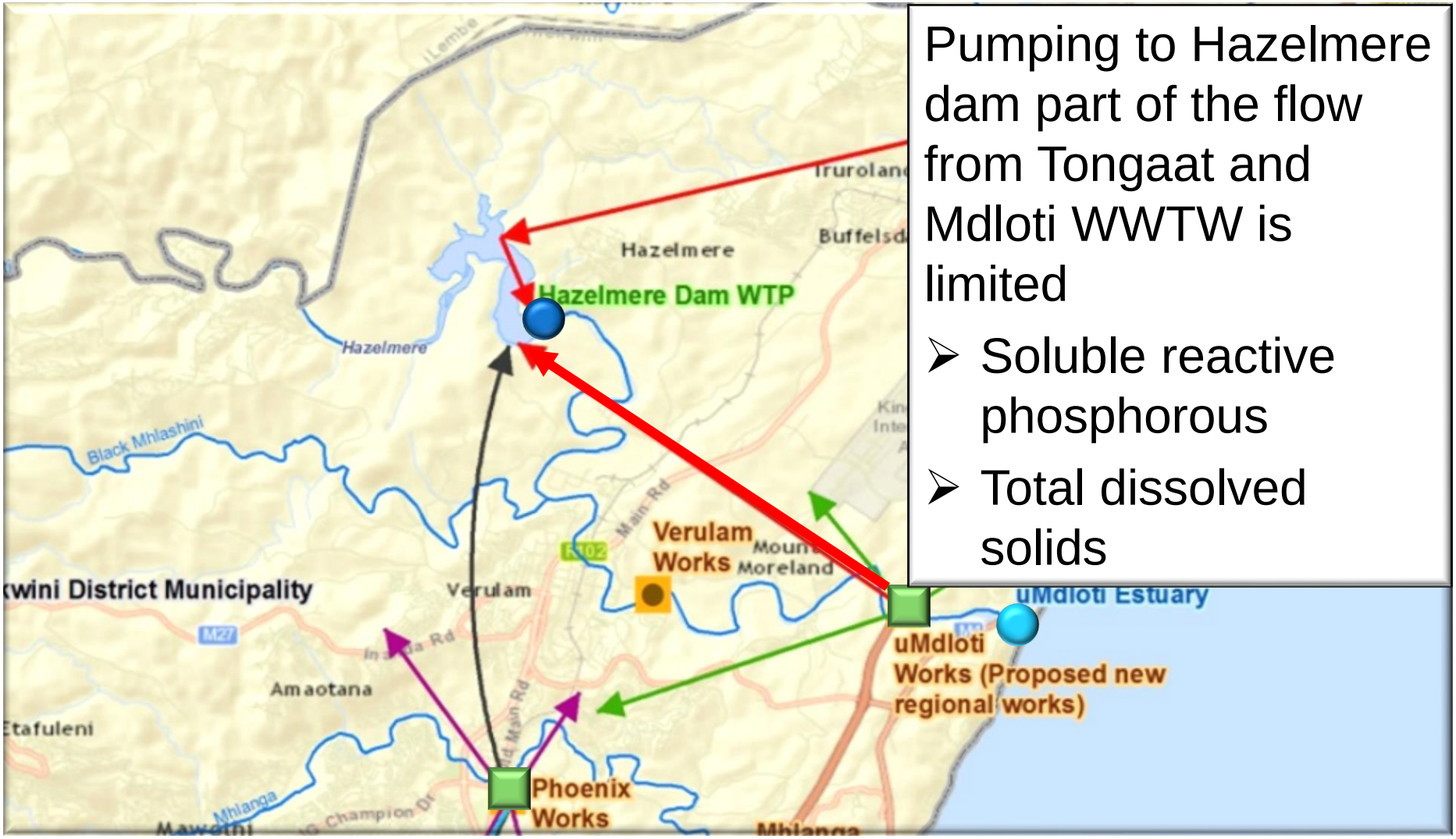
- Option 1 – Releases for Hazelmere
- Option 2 – Pumping to Hazelmere
- Option 3 – Sea outfall

REGIONAL UMDLOTI WWTW



POTENTIAL SITES





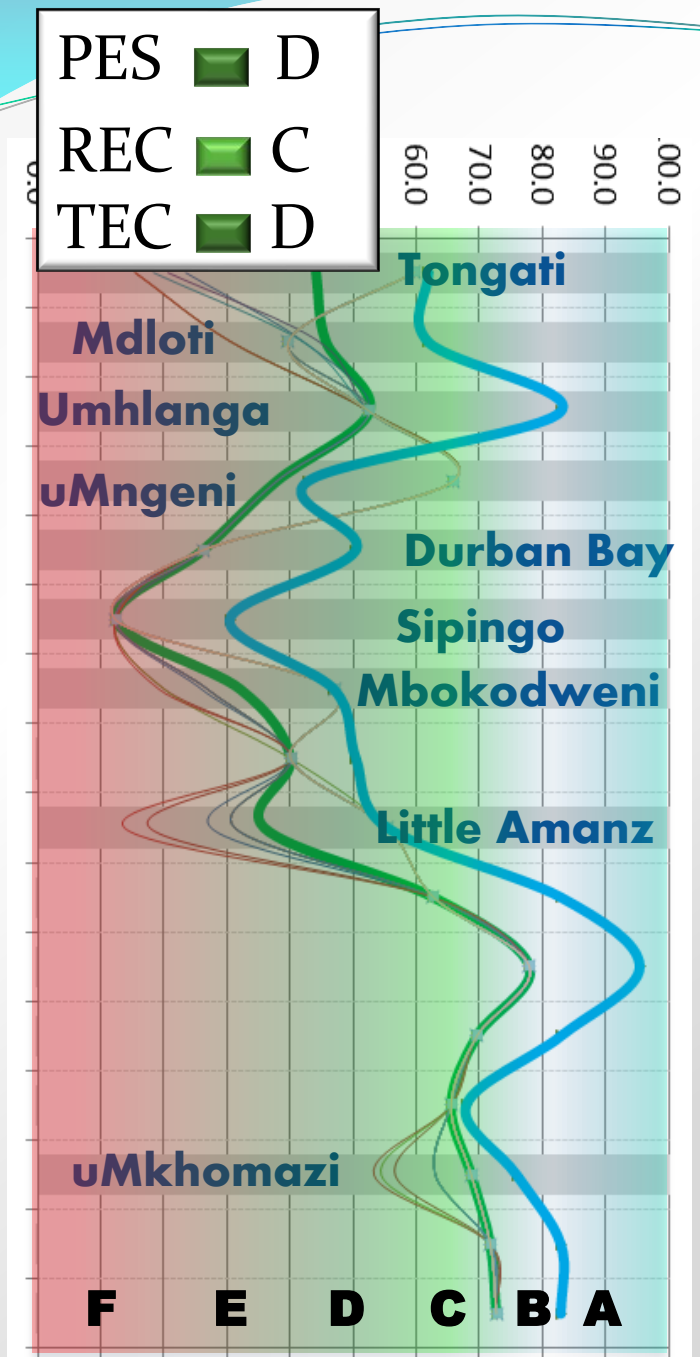
Pumping to Hazelmere dam part of the flow from Tongaat and Mdloti WWTW is limited

- Soluble reactive phosphorous
- Total dissolved solids

Option 2: Indirect reuse to Hazelmere

Option 3: Combine flows & build sea outfall

TONGAAT WWTW

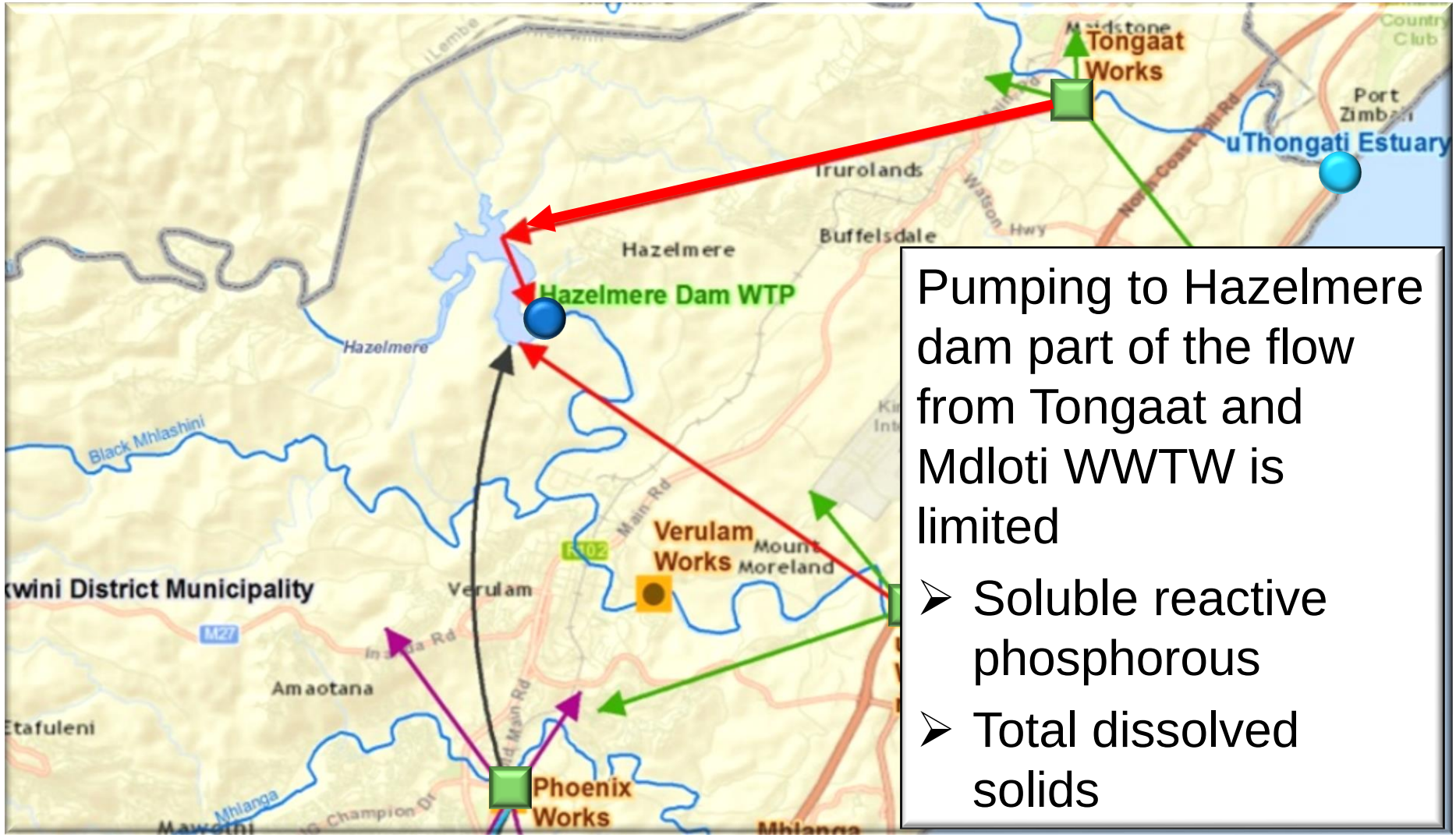


uThongati

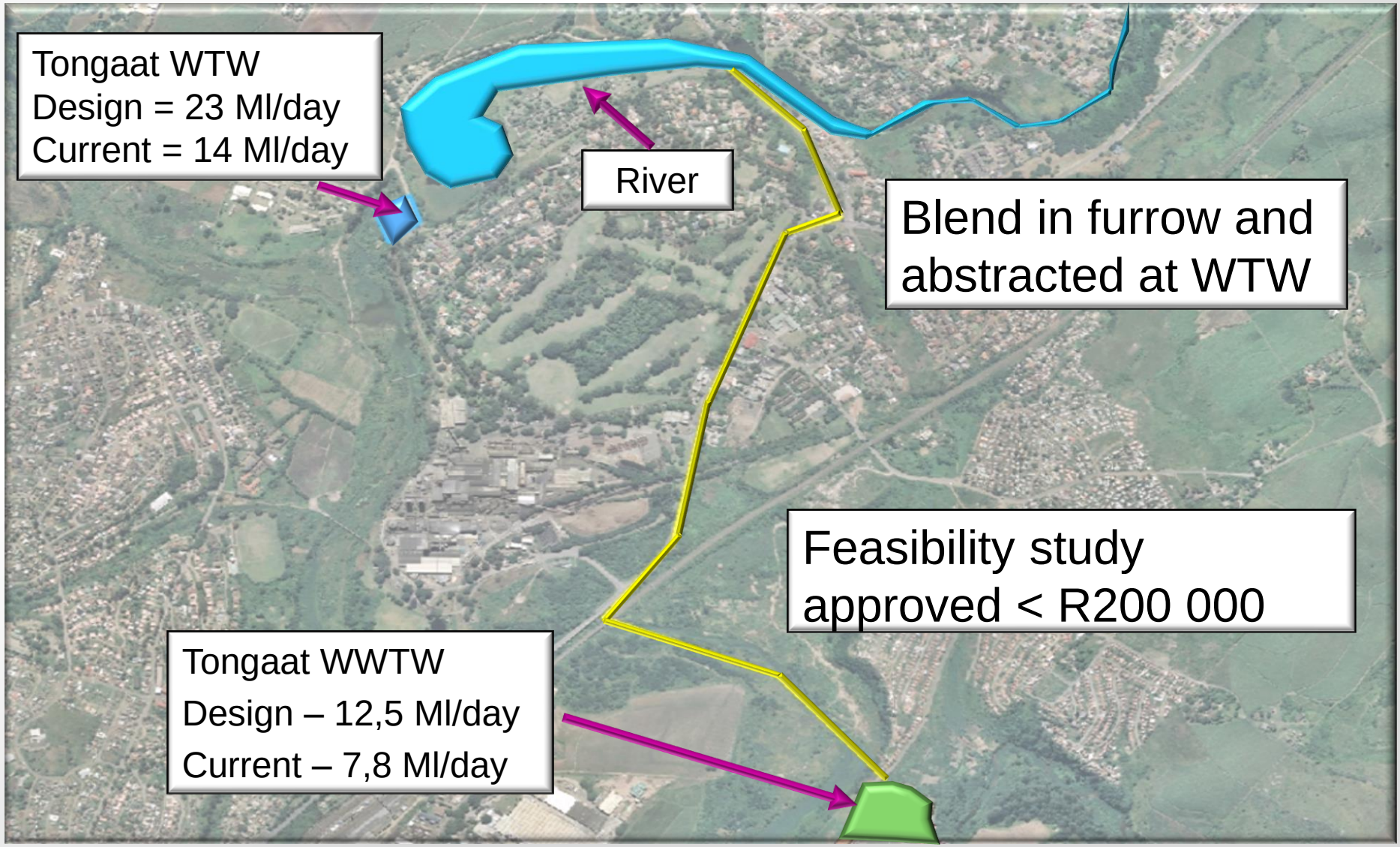
- Max discharge to estuary = 20 Ml/day
- REC can only be achieved if no wastewater is discharged into the estuary
- Some sensitivity to level of treatment
- Ultimate capacity required = 140 Ml/day

Wastewater effluent discharge options

- Option 1 – Pumping to Hazelmere
- Option 2 – Pumping to Tongaat furrow for abstraction at Tongaat WTW
- Option 3 – Sea outfall



Option 1: Indirect reuse to Hazelmere



Option 2: Indirect reuse at Tongaat WTW

Option 3: Combine flows & build sea outfall

SEA OUTFALL OR REUSE

- DWS CLASSIFICATION STUDY – LIMIT ON VOLUME OF EFFLUENT DISCHARGED TO RIVERS
- SOLUTIONS IDENTIFIED – SEA OUTFALL OR POTABLE REUSE
- CAPEX REQUIREMENTS:
  - SEA OUTFALL – ONCE OFF (THEN LOW OPERATING COSTS)
  - REUSE – HIGHER OVERALL COSTS – INCREMENTAL
- REUSE IS PREFERRED OPTION – WATER SECURITY, ENVIRONMENTAL REASONS

CAPACITY TO IMPLEMENT REUSE

Water re-use projects are complex and sophisticated, require high level of competence and skill. Capable implementation agency will require:

- Technical expertise
- Planning ability
- Project management capability
- Financial strength
- Trusted water services delivery
- Accepted by community and customers

- Compliance of existing WWTWs to achieve strict discharge standards is critical to the future success of water re-use.
- Strict enforcement of discharge standards;
- Addressing the management and performance failures of wastewater treatment plans.

- Water re-use has good potential to solve local water shortage problems
- Water re-use gives best quantitative benefit in coastal applications (uses water that would have discharged into the sea)

PPP

- **uMdloti – new works**

Ultimate capacity: 125 Ml/d
Designed Capacity: 40 Ml/d
Effluent standard: N 3 ppm, P 0.02 ppm

- **Tongaat – 10 Ml/d extension**

Ultimate capacity: 135 Ml/d
Designed Capacity: 20 Ml/d
Effluent standard: N 3 ppm, P 0.02 ppm

- uMkhomazi regional WWWT included in contract

ETHEKWINI MUNICIPALITY

Thank You