Post Doctoral Research Fellowship

Research Group Workshop
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DUT, Steve Biko Campus

Talent Diotrefe Banda
Mtech Student
Supervisor: Prof G.M. Ochieng'
Co-Supervisor: Dr B. Dzwairo
Civil Engineering Department

INCORPORATING A WATER QUALITY INDEX TO DEVELOP AN EQUITABLE RAW WATER PRICING MODEL: THE VAAL CASE STUDY: Talent Diotrefe Banda
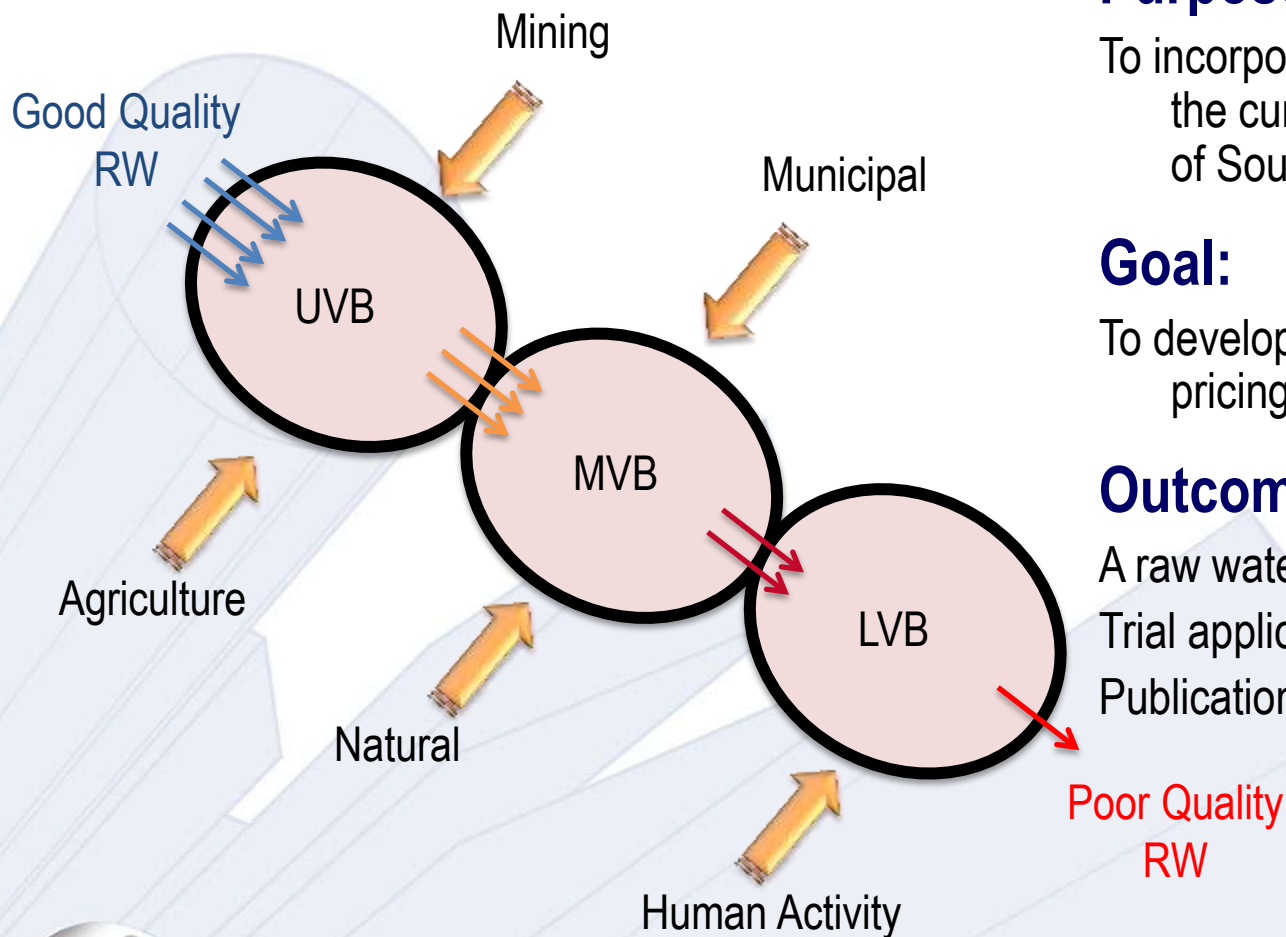
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PROJECT BACKGROUND:

Purpose:

To incorporate a Water Quality Index into the current raw water pricing strategy of South Africa

Goal:

To develop an equitable raw water pricing model

Outcome:

A raw water pricing model

Trial application

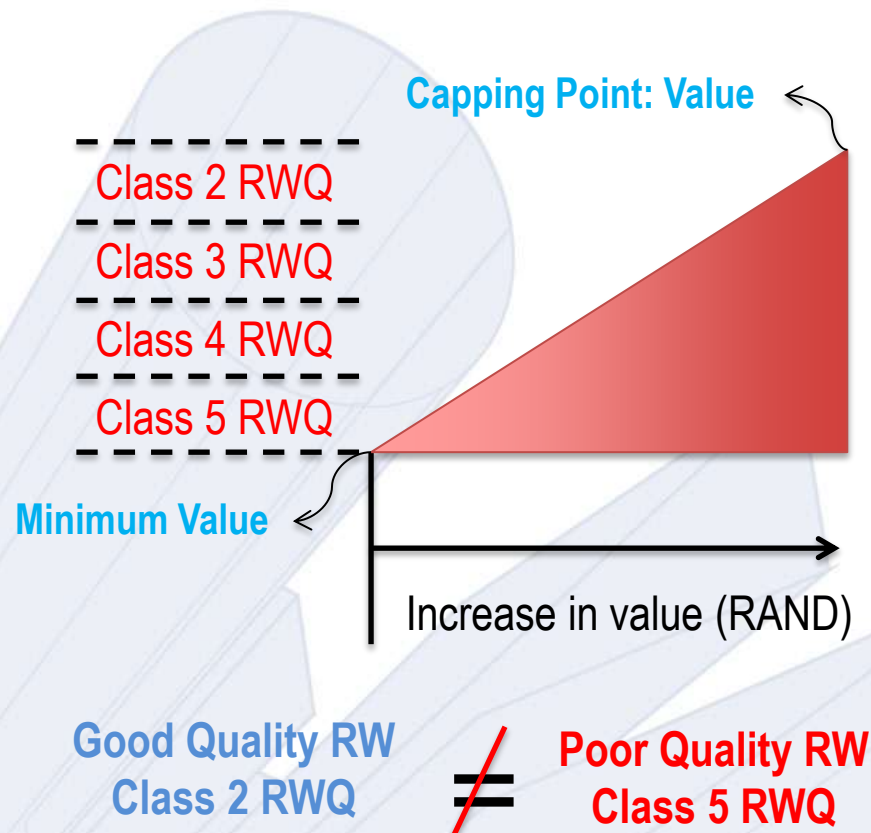Publication

PRICE MODELLING PRINCIPLE:

Effects of Raw Water of Poor Quality:

Increase in chemical requirements

Additional treatment infrastructure requirements; large sedimentation basins, aeration, etc.

Variance in operational procedures and

requirements; labour, electricity, time,

maintenance, etc.

The diminishing of water quality ultimately cost the downstream user more resources in the effort to restore the raw water quality

Capping Point: Value

- - - - - - - -
Class 2 RWQ
- - - - - - - -
Class 3 RWQ
- - - - - - - -
Class 4 RWQ
- - - - - - - -
Class 5 RWQ
- - - - - - - -

Minimum Value

Increase in value (RAND)

Good Quality RW Class 2 RWQ ≠ **Poor Quality RW Class 5 RWQ**

SIGNIFICANCE OF THE STUDY: Water Pricing Sequence

To predict realizable cost of raw water; attaching the true value of raw water depended upon the quality of the abstracted water.
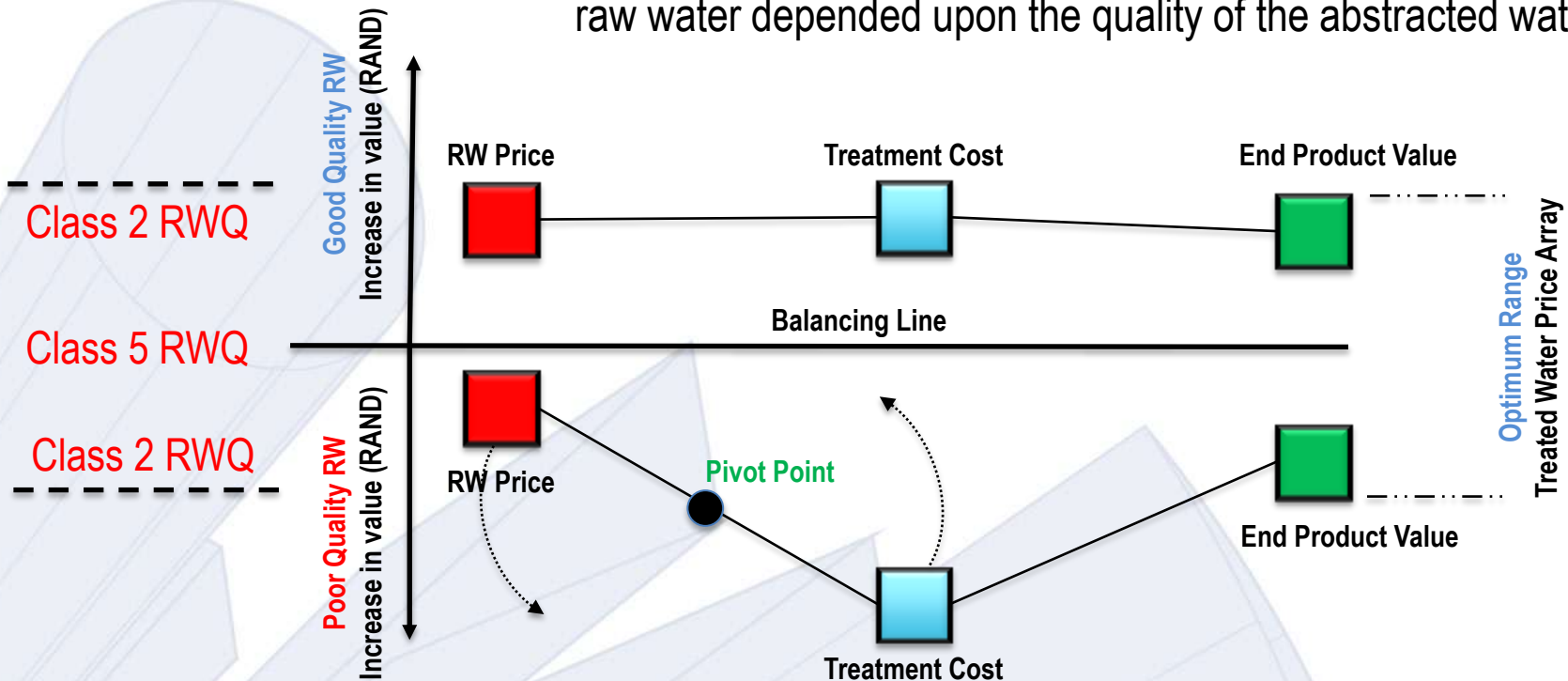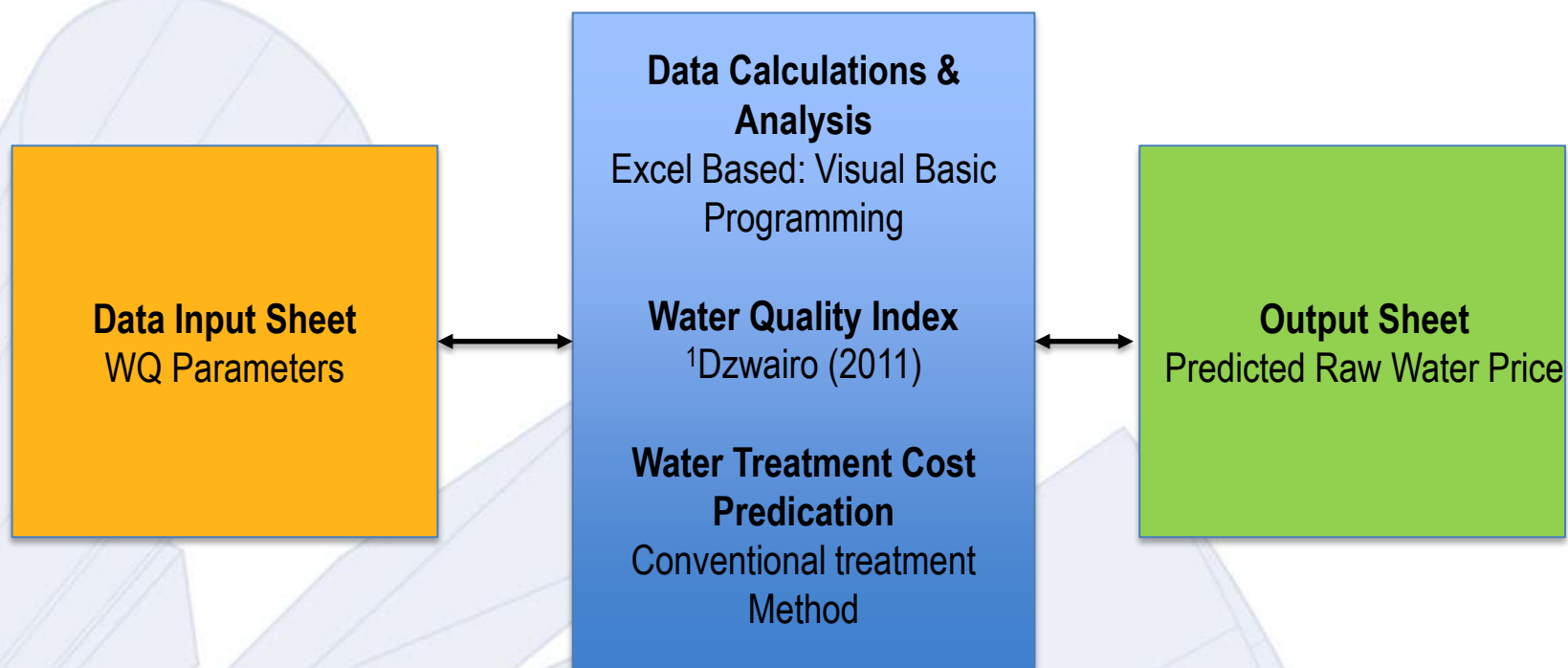

Intensify the effectiveness and proficiency of the raw water pricing strategy; achieving greater economic efficiency and balancing the water supply pricing chain; through optimization of the end product value.

PRICING MODEL: Excel Based

Data Input Sheet
WQ Parameters

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Data Calculations & Analysis
Excel Based: Visual Basic Programming

Water Quality Index
[1]Dzwairo (2011)

Water Treatment Cost Predication
Conventional treatment Method

↔

Output Sheet
Predicted Raw Water Price

[1]Dzwairo, 2011. Modelling raw water quality variability in order to predict cost of water treatment. Doctor Technologiae, Pretoria, Tshwane University of Technology

PRICING MODEL: Excel Based

Constraints and Assumptions

- Assume all water boards are using the same treatment technology.

- Assume the cost of treatment is based on conventional water treatment method; prediction may vary with deferent treatment methods.

- The pricing model will be built using Visual Basic Programming powered by Microsoft Excel; limiting the application to the use of Microsoft Office Suite.

- The Model should be updated frequently to reflect the correct amount of effort and cost required to restore the water quality at different levels of pollution.

RESOURCES REQUIREMENTS:

Stakeholder Organisation:
- Department of Water Affairs
- Water Boards in Gauteng Province
- Private Water Agencies
- Domestic water user's other than the Water Boards

Financial Resources:
Estimated project amount is **R 193,800.00** inclusive of VAT.

Completion Date:
Estimated project completion date is the 26th day of February 2014.

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