

# Maintenance Planning of Water and Wastewater Infrastructure

24 - 25 November 2022

08 - 09 March 2023

**Sandton, Johannesburg**



# THE COURSE CONTENT

## DAY ONE - MODULE ONE:

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### Introduction to Asset Maintenance and Management

- Reviewing the existing state-of-the-art current asset management practices
- Introduction to condition assessment / risk assessment techniques
- Introduction to water mains life cycle costing
- Inspection, Evaluation and Operation Methods for Existing Water Mains
- How to conduct inspection
- What to check/test
- Non-destructive monitoring and inspection techniques
- Documenting and analysis of report data for condition assessment

## MODULE TWO:

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### A Chronological Account of Progress in Maintenance and Operation

- Water Main Rehabilitation Overview – Pump Inspection and Maintenance
- Centrifugal Pumps
- Pump Characteristics
- Pump Head Curve
- System Characteristics
- System Head Curve
- Pump Operating Point
- Parallel Operation
- Hands on Examples

## MODULE THREE:

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### Operation of Distribution Storage

- Types of Distribution Reservoirs
- Flow in Pipe networks
- Pipes in Series/Parallel
- Pipe Network Analysis
- Hydraulics of Water wells

## MODULE FOUR:

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### Developing Water Mains Management Plan: An Owner's Perspective

- Identifying the need for water main rehabilitation
- Replacement vs. rehabilitation, establishing an effective balance
- Cost effectiveness of rehabilitation
- Establishing short and long range plan for rehabilitation
- Life cycle cost analysis for water main rehabilitation

## MODULE FIVE:

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### Why Is Maintenance A Necessity? And, What Are The Real Benefits?

- Condition rating models
- Deterioration models
- Internal/external corrosion of water mains
- System performance determines the best rehabilitation technique

## MODULE SIX:

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### Wastewater Treatment - Conventional Treatment Technologies

- Conventional treatment practices and typical wastewater treatment process schematic

### The Certificate

Clara Stella Consulting Certificate of Completion for delegates who attend and complete the training course.

# THE COURSE CONTENT

## DAY TWO - MODULE ONE:

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### Recycled Water Origin, Main Uses and Restrictions

- Recycled water from domestic sewage Waste Water Treatment Plants (WWTP's) and Selfcontained Sewage Treatment plants (STP's)
- Recycled water from Industrial and Agricultural applications
- Main uses of recycled or grey water
- Contribution of recycled water to the water balance
- Restrictions on the use of recycled water – relevant regulations relating to public health

## MODULE TWO:

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### Critical Water Main Maintenance Management Framework: A Case Study

- Overall management approach
- Various tool sets required for critical water main management
- Prototype conditioning rating tool
- Integrated Decision-Support Framework
- Decision framework for annual planning cycles

## MODULE THREE:

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### Asset Condition and Remaining Life

- Determining asset condition scores
- Typical failure modes
- Asset physical effective life and remaining life
- Class exercise

## MODULE THREE:

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### The Reinvestment Decision: Business Case Evaluation

- Life cycle cost analysis
- Risk reduction
- Strategic level – how many assets will fail
- Tactical level – which assets will fail
- Class exercises

## MODULE FOUR:

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### Levels of Service

- Internal and external level of service targets
- Triple bottom line LOS statements
- Key performance indicators
- Balancing future demand with current capabilities

## MODULE FIVE:

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### Risk as a Component in Asset Management Decision Making

- Implementing a risk framework
- Business risk exposure
- Probability of failure x consequences of failure
- Class exercise

## MODULE SIX:

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### Documentation and Commissioning

- Keys to operator acceptance
- How to perform system evaluation and justification
- Design stages – Sequence of Operation, P&ID, BOM,

## MODULE SIX:

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### Instrument lists

- Specifications, loop descriptions, I/O point lists
- Process and instrumentation diagrams
- Elementary diagrams, one line diagrams, loop diagrams
- Inspection
- Testing and reporting

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# Maintenance Planning of Water and Wastewater Infrastructure

Complete & send by fax/mail to address given below. Please use BLOCK CAPITALS.

This fee is inclusive of Documentation, Lunch and Refreshments

Date	Face to Face	Virtual Class	Face to Face	Virtual Class
<input type="checkbox"/> 24 - 25 November 2022	<input type="checkbox"/> Johannesburg	<input type="checkbox"/> Live Online	<input type="checkbox"/> R9 999.00	<input type="checkbox"/> R7 500.00
<input type="checkbox"/> 08 - 09 March 2023	<input type="checkbox"/> Johannesburg	<input type="checkbox"/> Live Online	<input type="checkbox"/> R9 999.00	<input type="checkbox"/> R7 500.00

Please use BLOCK CAPITALS to fill in this form. It is important that you read carefully through all information before starting to complete the form.

## PARTICIPANT DETAILS (1)

Last Name: \_\_\_\_\_ First Name (Mr./Mrs): \_\_\_\_\_

Position: \_\_\_\_\_ Company: \_\_\_\_\_

Telephone: \_\_\_\_\_ Mobile: \_\_\_\_\_ Email: \_\_\_\_\_

## PARTICIPANT DETAILS (2)

Last Name: \_\_\_\_\_ First Name (Mr./Mrs): \_\_\_\_\_

Position: \_\_\_\_\_ Company: \_\_\_\_\_

Telephone: \_\_\_\_\_ Mobile: \_\_\_\_\_ Email: \_\_\_\_\_

## PARTICIPANT DETAILS (3)

Last Name: \_\_\_\_\_ First Name (Mr./Mrs): \_\_\_\_\_

Position: \_\_\_\_\_ Company: \_\_\_\_\_

Telephone: \_\_\_\_\_ Mobile: \_\_\_\_\_ Email: \_\_\_\_\_

## AUTHORISATION

Authorisation By: \_\_\_\_\_

Position: \_\_\_\_\_ Company: \_\_\_\_\_

Postal Address: \_\_\_\_\_

Telephone: \_\_\_\_\_ Email: \_\_\_\_\_ Date: \_\_\_\_\_ Signature: \_\_\_\_\_