

## EXECUTIVE SUMMARY

Wastewater collection and treatment systems operate 24 hours, 7 days, 365 days of the year. There is limited control over the quantity and quality of the raw wastewater. The environment in which these municipal assets operate is aggressive, corrosive and subject to aging infrastructure. If any part of this system fails, the consequence to public health and the environment is severe. To mitigate potential risks, a Wastewater Risk Abatement Plan (W<sub>2</sub>RAP) becomes a valuable primary risk management tool to enhance municipal wastewater service delivery. The W<sub>2</sub>RAP encompasses all steps in the wastewater value chain, from production to discharge or reuse in a particular catchment. WRC and DWA recognise that the approach is not new. It draws on many of the principles and concepts from other risk management approaches, in particular the Water Safety Planning Process, Hazard and Operability Study (HAZOP) and Hazard Analysis and Critical Control Points (HACCP). The W<sub>2</sub>RAP is however, amongst the first world-wide initiatives that put in place a guideline to plan for, and apply a risk-based approach to improve and sustain wastewater service performance.

The W<sub>2</sub>RAP is underpinned by the legislative environment, as well as municipal business requirements such as the IDP, WSDP, Quality Management Systems, Infrastructure Asset Management Plans and Levels of Service. The W<sub>2</sub>RAP builds on existing Best Practical Environment Option and outlines a methodical and organised approach to ensure consistent compliance and best practice in rendering wastewater services. The W<sub>2</sub>RAP focuses on public health and natural resource protection and addresses the most eminent hazards, risks and controls that may apply along the value chain. Emphasis is on wastewater planning and management, not on testing, with documentation and communication being a key component of the process. The development of the W<sub>2</sub>RAP in South Africa was undertaken collectively by the Department of Water Affairs and the Water Research Commission, and the prototype testing has been undertaken by the City of Cape Town, eThekweni Municipality, Nelson Mandela Bay Municipality and Steve Tshwete Local Municipality. The 'prototype testing' approach was taken to ensure that the Guideline conform to the practical realities and operational circumstances that influence the municipal wastewater business on a day to day basis. The W<sub>2</sub>RAP shows the synergies between the W<sub>2</sub>RAP and Water Safety Planning Process (WSPP) as municipal planning tools, as well as the link to the Blue- and Green Drop regulatory programmes in South Africa.

Different approaches in W<sub>2</sub>RAP development and implementation were found when testing the W<sub>2</sub>RAP Guideline within the different municipalities. Approaches varied from comprehensive plans for individual systems in high capacity municipalities; to strategic riskbased W<sub>2</sub>RAPs in metropolitan municipalities; to CRR risk abatement planning in smaller municipalities that focus on swift turnaround in the most critical risk areas. Whichever the approach taken, an inclusive and methodical process is outlined to ensure that the municipal user arrives at a practical and living W<sub>2</sub>RAP, in order to plan and manage towards safe and compliant municipal wastewater services in South Africa. The following schematic will direct the user through the Guideline document: