

# Improving Resiliency

## 11.1 OPERATIONAL OPTIMISATION

### ISO 17025 Accredited Laboratory Services Assuring Water Quality

Umgeni Water's Laboratory Services is a dynamic centre of excellence comprising four (4) modern ISO/IEC 17025 accredited laboratories in Chemistry, Microbiology, Hydrobiology, and soil testing with a long established reputation of meeting international standards. Modern analytical techniques and a team of fifty-seven (57) highly skilled and dedicated scientists and technicians, enable Umgeni Water to provide a world-class service 365 days a year. In its last recertification audit (2013), the laboratory was recommended for continued accreditation status.

The key objectives of the laboratory in support of Umgeni Water's primary business:

- Providing assurance that the organisation produces potable water that complies with drinking water standards, assuring that treated effluent complies with wastewater and effluent discharge limits, thereby assuring public health protection from water-borne diseases and water related health impacts,
- Undertaking research and development, generation of scientific data for new infrastructure development, and supporting/auditing water treatment for process selection and optimisation, and
- In addition, catchment and river health monitoring is undertaken to assess the status of water resources and quality of raw water supply.

Water samples from the entire supply system (catchment to consumer) are collected by a team of dedicated sampling officers on a daily basis throughout Umgeni Water's operational area and is assessed in terms of its physical, chemical and microbiological characteristics.

The analytical results are produced within specified times that form part of a Service Level Agreements with end users. Supported by its new Labware Laboratory Information Management System (LIMS), water quality results are captured, validated, stored and reported. In addition, direct access is provided to external users via the Electronic Water Quality Management System (eWQMS), the Blue Drop System (BDS) and the Green Drop System (GDS).

Early warnings and alerts are provided to stakeholders immediately that a breach of quality standards is detected. An incident management protocol is followed, to contain and remedy the breach. The laboratory generates 20 000 to 30 000 analyses per month.





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*Water sample scanning-1990s*



## *Water quality testing and assurance over the years*

*Water quality testing 2012*



## **Assurance through robust information and communications technology systems**

Umgeni Water has an organisation-wide and holistic ICT management approach in place that aligns information and communication technology systems to its business strategies and thereby supports information requirements and decision-making capabilities of the organisation.

Umgeni Water uses the Government-Wide Enterprise Architecture (GWEA) framework, adopted and customised for South Africa by the

national Government Information Technology Officers' Council (GITOC) for its enterprise architecture.

In the year under review progress was made with implementation of Umgeni Water's Information Communication Technology systems capital investment programme which has ensured that Umgeni Water has resilient systems in place to deliver on its mandate.

Programmes completed in the reporting period include:

- Redundant Wireless Network for operational areas, which has ensured a stable communication platform,

*Imvutshane Dam Construction*

## Improving Resiliency

- The creation of a regional office / secondary computer room to enhance business continuity,
- Treasury Management System,
- Performance Management Information System,
- Laboratory Management System, and
- ICT Governance framework, which has ensured alignment with King III.

Umgeni Water's ICT plans for 2014/2015 include:

- Implementation of Year 2 of the ICT Strategy
- Enterprise Resource Planning (ERP) System,
- Benchmarking System,
- Innovation Management System,
- Information and Content Management System,
- Upgrade of the Intranet and Internet,
- Web Water forum,
- GIS Ortho photography,
- Business Process re-engineering,
- Unified Communications Plan, and
- Response to the POPI Act.

## Research and Innovation

In the year Umgeni Water approved its Innovation Policy, the purpose of which is to provide a favourable corporate environment for innovative suggestions to emerge. Umgeni Water will benefit from this through its employees working differently and more creatively to serve the organisation and sector needs.

The utilisation of new technology and processes to improve efficiencies and increase effectiveness within Umgeni Water's operations is considered a key component of moving the organisation forward in its growth phase. A large portion of the knowledge gained in new technology and processes that will be applicable to the organisation is through the innovation, research and development (IRD) projects that are undertaken by the organisation itself and by the University of KwaZulu-Natal (UKZN) for the organisation through the UW/UKZN Chair of Water Resource Management.

Umgeni Water plans and implements several projects for which work completed is shown in **Table 11.1**.

**Table 11.1:** Umgeni Water's major research projects and progress made in 2013/2014.

Research Project	Objectives	Progress 2013/2014
1. Evaluation of Ultrafiltration as an Alternative to Conventional Potable Water Treatment.	To test the applicability of Ultrafiltration technology for treatment of low turbidity waters at Umgeni Water.	All planned pilot trials were successfully completed. Ultrafiltration is a viable alternative to conventional water treatment processes in the treatment of low turbidity water.
2. Determination of Residual Polymeric Coagulants in Potable Water.	To develop an analytical method to quantify the residual polymer in final drinking water.	An analytical method using colloidal gold particles has been successfully developed. A preliminary scan of samples from some of the water treatment works in Umgeni Water is in progress.
3. Long-term Effects of Coagulants on Filter Performance.	To determine the impact of coagulants (inorganic and organic) on the long-term performance of rapid gravity filters.	Plant trials assessing the impact of coagulants on long-term filter performance are being finalised.

In addition, Umgeni Water continues with its research programme in modern analytical techniques As follows:

- Radioactive screening: Tests for uranium, and alpha-beta radioactivity,
- Endocrine Disrupting Compounds: The levels of Endocrine Disrupting Compounds (EDCs) at Darvill Wastewater Treatment Works,
- Polymers for water treatment: A test method using gold nanoparticles is currently being assessed,
- Soil testing: New methods for thirty-six (36) different analyses are currently being implemented for routine application, and
- Real Time Polymerase Chain Reaction (PCR): Work is progressing steadily with testing for enteric viruses.

## 11.2 RISK MANAGEMENT

Umgeni Water defines risk as any exposure to the consequences of uncertainty that could affect the organisation's ability to meet its strategic objectives. Risk management is guided by an Integrated Risk Management Framework which is aligned to strategy, thereby ensuring a focused and directed process of risk management in the organisation. The Board of Umgeni Water approves the organisation's risk appetite and tolerance framework on an annual basis.

The organisation's strategic risks are shown in **Table 11.2** and show the link to strategic perspectives, objectives and outcomes and how these have been treated / mitigated. Of a total of nine (9) strategic risks, 89% have been treated to a level equal to or above 50% (reasonable) overall control strength and 78% of risks to a level equal to or above 70% (good) overall control strength. All strategic risks are within the organisation's risk tolerance level. Four risks (4) are outside the appetite level

**Table 11.2:** Umgeni Water Strategic Risks as at 30 June 2014

Risk #	Risk Name, Score and Status	Cause, Context and Treatment	Main Strategic, Perspective, Objectives and Outcomes Impacted
1	<p><b>Performance of bulk wastewater infrastructure assets.</b></p> <ul style="list-style-type: none"> <li>Overall Control Strength: Reasonable 50%</li> <li>Severity: Moderate-Low: 15</li> <li>Probability: 72% Likely and/or could occur within 1 year</li> <li>Risk Owner: GM Operations</li> </ul> <p><b>Score</b></p> <p><b>10.8 (Low)</b></p> <p><b>Risk Appetite and Tolerance</b></p> <ul style="list-style-type: none"> <li>Outside Appetite</li> <li>Within Tolerance</li> </ul>	<p>Cause and Context: Influent quality-illegal discharges from industries and storm water infiltration. Capacity and technology constraints, resulting in non-compliance with effluent discharge requirements.</p> <p><i>Treatment Approach: Initiatives planned and implemented at each WWTW and critical refurbishment and upgrades of major works included and implemented as part of capital programme.</i></p>	<p><b>Customer and Stakeholder Perspective:</b> SO2: Increase customer and stakeholder value. <b>Organisational Capacity Perspective:</b> SO7: Improve and increase infrastructure assets.</p> <p><b>Outcomes</b> Infrastructure Stability Product Quality Customer Satisfaction Stakeholder Understanding and Support Community and Environmental Sustainability.</p>
2	<p><b>Infrastructure investment to meet service delivery mandate and growth plans.</b></p> <ul style="list-style-type: none"> <li>Overall Control Strength: Good 78%</li> <li>Severity: Moderate: 19</li> <li>Probability: 50% Fairly poor and/or could possibly occur within 2 years</li> <li>Risk Owner: GM Engineering and Scientific Services</li> </ul> <p><b>Score</b></p> <p><b>9.5 (Low)</b></p> <p><b>Risk Appetite and Tolerance</b></p> <ul style="list-style-type: none"> <li>Outside Appetite</li> <li>Within Tolerance</li> </ul>	<p>Cause and Context: Alignment and prioritisation of the infrastructure plan and budget to increase capacity to meet demand, improve service levels and for growth. Inaccurate demand estimates obtained leading to inefficiency in infrastructure project planning and design.</p> <p><i>Treatment Approach: Critical supply infrastructure is annually identified, aligned, prioritised, funded and implemented as part of the organisation's capital infrastructure programme linked to strategy.</i></p>	<p><b>Customer and Stakeholder Perspective:</b> SO1: Increase services and customers. SO2: Increase customer and stakeholder value. <b>Organisational Capacity Perspective:</b> SO7: Improve and increase infrastructure assets.</p> <p><b>Outcomes</b> Infrastructure Stability Product Quality Customer Satisfaction Stakeholder Understanding and Support Community and Environmental Sustainability.</p>
3	<p><b>Sustainable Tariff</b></p> <ul style="list-style-type: none"> <li>Overall Control Strength: Good 70%</li> <li>Severity: Minor-High: 7</li> <li>Probability: 51% Even probability and/or could occur within 1- 2 years</li> <li>Risk Owner: GM Finance</li> </ul> <p><b>Score</b></p> <p><b>3.6 (Low)</b></p> <p><b>Risk Appetite and Tolerance</b></p> <ul style="list-style-type: none"> <li>Within Appetite</li> <li>Within Tolerance</li> </ul>	<p>Cause and Context: Constraints on ability to charge a tariff that will ensure financial viability and protection of operating cash flows against operating risk including volatile sales volumes, above inflation input costs (major cost drivers) and high energy costs. Impacted by changes in operating rules, significant capital investments with low returns and high impairment costs. Uncertainty around tariff approval process.</p> <p><i>Treatment Approach: Tariff policy ensures transparency and formal tariff process. Scenario analysis on the impact of operational risk factors on financial viability. On-going optimisation of funding mix from tariff, grants and borrowing for capital programme. Enhanced stakeholder engagement to secure grant funding for developmental projects.</i></p>	<p><b>Customer and Stakeholder Perspective:</b> SO1: Increase services and customers. SO2: Increase customer and stakeholder value. <b>Financial Perspective:</b> SO4: Increase financial sustainability. <b>Organisational Capacity Perspective:</b> SO7: Improve and increase infrastructure assets.</p> <p><b>Outcomes:</b> Financial Viability Infrastructure Stability Customer Satisfaction Stakeholder Understanding and Support Community and Environmental Sustainability.</p>

Risk #	Risk Name, Score and Status	Cause, Context and Treatment	Main Strategic, Perspective, Objectives and Outcomes Impacted
4	<p><b>Ability to deliver projects on time and within budget.</b></p> <ul style="list-style-type: none"> <li>Overall Control Strength: Reasonable 70%</li> <li>Severity: Minor: 5</li> <li>Probability: 51% Even probability and/or could occur within 1- 2 years</li> <li>Risk Owner: GM Engineering and Scientific Services</li> </ul> <p><b>Score</b></p> <p><b>2.5 (Low)</b></p> <p><b>Risk Appetite and Tolerance</b></p> <ul style="list-style-type: none"> <li>Within Appetite</li> <li>Within Tolerance</li> </ul>	<p>Cause and Context: Actual cost and delivery time of projects may significantly differ from approved plans. The variation may lead to undesirable impacts such as reputational damage and financial costs.</p> <p><i>Treatment Approach: Effective engineering, procurement and construction management (EPCM) process alignment within the specified time-frames.</i></p>	<p><b>Customer and Stakeholder Perspective:</b> SO1: Increase services and customers. SO2: Increase customer and stakeholder value.</p> <p><b>Organisational Capacity Perspective:</b> SO7: Improve and increase infrastructure assets.</p> <p><b>Outcomes</b> Infrastructure Stability Product Quality Customer Satisfaction Stakeholder Understanding and Support Community and Environmental Sustainability.</p>
5	<p><b>Water resources availability</b></p> <ul style="list-style-type: none"> <li>Overall Control Strength: Poor 40%</li> <li>Severity: Minor: 5</li> <li>Probability: 50 % Fairly poor and/or could possibly occur within 2 years</li> <li>Risk Owner: GM Engineering and Scientific Services</li> </ul> <p><b>Score</b></p> <p><b>2.5 (Low)</b></p> <p><b>Risk Appetite and Tolerance</b></p> <ul style="list-style-type: none"> <li>Outside Appetite</li> <li>Within Tolerance</li> </ul>	<p>Cause and Context: South Coast system supply currently exceeds demand which is &gt;98% assured yield. Planning horizons and prioritisation to match supply and demand.</p> <p><i>Treatment Approach: Integrated planning and implementation for short, medium and long-term augmentation of systems with stakeholders. Water conservation and demand management initiatives. Review of water resources mix including reuse and desalination.</i></p>	<p><b>Customer and Stakeholder Perspective:</b> SO1: Increase services and customers SO2: Increase customer and stakeholder value</p> <p><b>Organisational Capacity Perspective:</b> SO8: Increase water resources sustainability</p> <p><b>Outcomes:</b> Water Resources Adequacy Customer Satisfaction Stakeholder Understanding and Support Community and Environmental Sustainability.</p>
6	<p><b>Protection and safeguarding of assets.</b></p> <ul style="list-style-type: none"> <li>Overall Control Strength: Good 75%</li> <li>Severity: Minor: 4</li> <li>Probability: 58 % Even probability and/or could occur within 1- 2 years</li> <li>Risk Owner: GM Corporate Services</li> </ul> <p><b>Score</b></p> <p><b>2.3 (Low)</b></p> <p><b>Risk Appetite and Tolerance</b></p> <ul style="list-style-type: none"> <li>Outside Appetite</li> <li>Within Tolerance</li> </ul>	<p>Cause and Context: Illegal settlements and unauthorised construction on properties and servitudes. Umgeni Water’s right of access limited. General encroachment and impact on assets. Remote locations are difficult to secure or monitor resulting in theft and vandalism.</p> <p><i>Treatment Approach: Implementation of servitude management procedure. Safety and security measures to protect staff, assets and public. Properties and servitudes maintained and monitored. Disposal of property no longer in use.</i></p>	<p><b>Customer and Stakeholder Perspective:</b> SO2: Increase customer and stakeholder value.</p> <p><b>Organisational Capacity Perspective:</b> SO7: Improve and increase infrastructure assets.</p> <p><b>Outcomes</b> Infrastructure Stability Stakeholder Understanding and Support Community and Environmental Sustainability.</p>
7	<p><b>Ability to secure funding to meet developmental goals.</b></p> <ul style="list-style-type: none"> <li>Overall Control Strength: Good 80%</li> <li>Severity: Minor: 5</li> <li>Probability: 40 % Fairly poor and/or could possibly occur within 2 years</li> <li>Risk Owner: GM Finance</li> </ul> <p><b>Score</b></p> <p><b>2 (Low)</b></p> <p><b>Risk Appetite and Tolerance</b></p> <ul style="list-style-type: none"> <li>Within Appetite</li> <li>Within Tolerance</li> </ul>	<p>Cause and Context: Inability to secure required project grant funding. Delayed receipt of funding resulting in projects not being delivered on time. Budgetary pressure, rising cost of capital and cost cutting due to macro-economic pressures.</p> <p><i>Treatment Approach: Enhanced stakeholder engagement to secure grant funding for developmental projects. On-going optimisation of funding mix from tariff, grants and borrowing.</i></p>	<p><b>Customer and Stakeholder Perspective:</b> SO1: Increase services and customers SO2: Increase customer and stakeholder value</p> <p><b>Financial Perspective:</b> SO3: Increase mobilisation of funds</p> <p><b>Organisational Capacity Perspective:</b> SO7: Improve and increase infrastructure assets</p> <p><b>Outcomes</b> Infrastructure Stability Customer Satisfaction Stakeholder Understanding and Support Community and Environmental Sustainability Financial Viability.</p>

Risk #	Risk Name, Score and Status	Cause, Context and Treatment	Main Strategic, Perspective, Objectives and Outcomes Impacted
8	<p><b>Skill availability, attraction and retention.</b></p> <ul style="list-style-type: none"> <li>• Overall Control Strength: Good 75%</li> <li>• Severity: Minor: 3</li> <li>• Probability: 50 % Fairly poor and/or could possibly occur within 2 years</li> <li>• Risk Owner: GM Corporate Services</li> </ul> <p><b>Score</b></p> <p><b>1.5 (Low)</b></p> <p><b>Risk Appetite and Tolerance</b></p> <ul style="list-style-type: none"> <li>• Within Appetite</li> <li>• Within Tolerance</li> </ul>	<p>Cause and Context: Scarcity of critical and core skills and competitive external jobs environment. Extent of implementation of succession plan in relation to critical and core skills.</p> <p><i>Treatment Approach: Implementation of succession plans and approved workforce plans. Programmes to build leadership, management and functional competence and to develop technical skills for the organisation are included in current strategy plan.</i></p>	<p><b>Organisational Capacity Perspective:</b> SO9: Increase skills and competency.</p> <p><b>Outcomes</b> Leadership and Employee Development</p>
9	<p><b>Performance of bulk potable water infrastructure assets.</b></p> <ul style="list-style-type: none"> <li>• Overall Control Strength: Very Good 90%</li> <li>• Severity: Minor-Low: 3</li> <li>• Probability: 35 % Doubtful and/or unlikely to occur within next 2 years</li> <li>• Risk Owner: GM Operations</li> </ul> <p><b>Score</b></p> <p><b>1 (Low)</b></p> <p><b>Risk Appetite and Tolerance</b></p> <ul style="list-style-type: none"> <li>• Within Appetite</li> <li>• Within Tolerance</li> </ul>	<p>Cause and Context: Process failures, capacity and technology constraints at water treatment plants resulting in final water non-compliance with potable water standard.</p> <p><i>Treatment Approach: Initiatives planned and implemented at each WTW and critical refurbishment and upgrades of works included and implemented as part of asset programme.</i></p>	<p><b>Customer and Stakeholder Perspective:</b> SO2: Increase customer and stakeholder value.</p> <p><b>Outcomes:</b> Product Quality Customer Satisfaction Stakeholder Understanding and Support Community and Environmental Sustainability.</p>

Financial risks are detailed in the annual financial statement section of this annual report.

### Mitigated Risks

Mitigated risks refer to risks that have been treated to an acceptable level with continual monitoring by Internal Audit to ensure the controls in place are still effective and efficient. The following risk are mitigated:

- Governance of ICT: there is an ICT Governance framework and Road Map, implementation of which is monitored quarterly,
- Liquidity risk: existing controls are sufficient to mitigate this risk. There is an approved short-medium-long term funding strategy in place which meets the on-going cash requirements of the business in line with the five-year financial business plan. In addition Umgeni Water has an adequate liquidity buffer and is currently operating within the borrowing limits approved by National Treasury,
- Fraud risks: controls are in place to mitigate this risk and there is constant monitoring by the Ethics and Audit committees, and
- Stakeholder relations - statutory, contracted and non-contracted: the reputation and branding marketing plan as well as the stakeholder management strategy have been improved.

### Emerging Risks

In line with regular revisions of the strategy the organisation regularly reviews the internal and external landscapes that affect Umgeni Water's risk profile with a view to identifying emerging risks.

- Climate change remains on the radar as an emerging risk.