



TERMS OF REFERENCE FOR A DIRECTED WRC PROJECT

THEMATIC AREA	Water Quality and Health
TITLE	Development and implementation of a robust framework for the management of Contaminants of Emerging Concern (CECs) in South Africa: Piloting the implementation of a national water programme on Contaminants of Emerging Concern (CECs) in South Africa

1. Background and rationale

South Africa is increasingly confronted with the occurrence and impacts of contaminants of emerging concern (CECs) in water resources, wastewater systems, drinking water supplies, and aquatic ecosystems. CECs include synthetic or naturally occurring substances such as pharmaceuticals, personal care products, endocrine disrupting compounds, industrial chemicals, microplastics, antimicrobial resistance determinants, per- and polyfluoroalkyl substances (PFAS), pesticides, illicit drugs, and other trace organic and inorganic pollutants that are not routinely monitored or adequately regulated. Research undertaken in South Africa and internationally has demonstrated that exposure to these CECs can pose significant risks to ecological integrity, public health, agricultural productivity, and water security, particularly where contaminants persist in the environment, accumulate in aquatic systems, disrupt biological and endocrine functions, contribute to antimicrobial resistance, or enter drinking water and food production systems through wastewater reuse and contaminated surface or groundwater resources.

Currently, South Africa faces several institutional and technical challenges relating to fragmented monitoring efforts, limited harmonisation of analytical methods, insufficient risk assessment frameworks, uneven laboratory capabilities, and constrained integration of scientific evidence into policy and regulatory systems. The Department of Water and Sanitation (DWS), through its National Chemical, Toxicity and Microbial Monitoring Programmes, has identified critical gaps in policy development, establishment of priority CEC lists for monitoring, standardised sampling procedures, laboratory analytical capacity, and health risk guidance. The Water Research Commission (WRC) in collaboration with the Department of Water and Sanitation hereby invites proposals from suitably qualified institutions, consortia, and strategic partners to support the design and piloting of a coordinated national water programme on Contaminants of Emerging Concern (CECs) in South Africa. The programme aims to establish an integrated and collaborative platform for monitoring, data management, research coordination, risk assessment, stakeholder engagement, and decision support relating to CECs in the water sector. This pilot initiative is intended to support the development of a long-term national framework and implementation model that is sustainable, and can be institutionalised and scaled across the country.



2. Programme Objectives

General Objective

To pilot the implementation of a coordinated and collaborative National Water Programme on Contaminants of Emerging Concern (CECs) that strengthens monitoring, research integration, risk assessment, governance, and evidence-based decision-making for water quality management in South Africa.

Specific Objectives

The appointed institution(s) or consortium will be expected to:

- Strengthen national coordination and collaboration among key stakeholders, including other government departments, water utilities, laboratories, research institutions, and industry stakeholders;
- Develop and operationalise a pilot national coordination framework for CECs in the water sector, aligned with the DWS's existing National Chemical, Toxicity, and Microbial Monitoring Programmes, including co-located sampling of water columns and sediments at designated monitoring sites, while also contributing to and supporting initiatives on antimicrobial resistance (AMR) surveillance in water.
- Identify and prioritise key CEC categories, monitoring hotspots, and priority catchments;
- Evaluate laboratory capabilities and analytical infrastructure for priority CECs;
- Pilot harmonised approaches for monitoring, sampling, analytical methods, quality assurance, and data management;
- Conduct pilot monitoring and/or surveillance activities at selected sites;
- Support environmental and public health risk assessment approaches;
- Contribute and support initiatives under national CEC data and information management platforms,
- Assess governance, policy, regulatory, financial and institutional requirements for a national programme;
- Develop a roadmap and implementation strategy for scaling and institutionalising the programme nationally.

3. Scope of work

The DWS's existing monitoring programmes, i.e., the National Chemical, Toxicity and Microbial Monitoring Programmes, including water column and sediment sampling sites, should serve as the pilot platform for this initiative. The scope of work to be conducted under this programme shall include, but not be limited to:

- Establishing and piloting a coordinated national CEC programme framework, aligned to the DWS's existing monitoring sites, with sampling protocols covering both water column and sediment matrices where applicable;
- Strengthening collaborative monitoring and analytical capacity;
- Supporting harmonised methodologies and integrated data management systems;
- Piloting priority monitoring and risk assessment activities;
- Facilitating stakeholder coordination and governance arrangements;
- Developing recommendations for the long-term institutionalisation and scaling of the programme; and



- Ensuring that all data generated through the project are archived accordingly, both within WRC's data repository and the DWS Water Management System (WMS) to support continuous monitoring and long-term data accessibility beyond the project lifespan.

4. Deliverables

The appointed partner(s) will be expected to deliver, at minimum:

- Inception report, including detailed information on programme design and implementation plan, a stakeholder engagement/coordination framework, and a formal partnership agreement with DWS defining roles, site access, data archiving, and steering committee participation.
- Annual progress report(s) on:
 - National baseline assessment of technical, institutional, regulatory, analytical, and infrastructure gaps relating to the monitoring, management, and governance of Contaminants of Emerging Concern (CECs) in South Africa.
 - Priority CEC inventory and prioritisation framework;
 - Harmonised monitoring framework and protocols;
 - Standard methods, monitoring guidance documents and QA/QC guidelines;
 - Pilot monitoring datasets and technical reports;
 - National CECs status and knowledge products;
 - Laboratory assessment and capacity strengthening report;
 - Training materials and workshop reports.
 - Regulatory benchmarking and policy recommendations;
 - Knowledge dissemination and communication;
- Final programme report with sustainability recommendations, evidence of data archiving on both WRC and DWS repositories, and a formal handover plan to DWS for implementation of CEC surveillance within the National Chemical, Toxicity and Microbial Monitoring Programmes.

The deliverables above may be sub-divided by the proposers, if desired, into not more than three deliverables per financial year. The first-year deliverables may NOT include an advance. Approximately 10% of the programme budget should be allocated toward knowledge dissemination, communication, stakeholder engagement, and capacity development activities. The final deliverable of the print-ready final report, valued at 20% of the Budget is required.

5. Eligibility and Required Expertise

Proposals are invited from universities and higher education institutions; science councils and research institutions; accredited laboratories; professional bodies and sector associations; non-governmental organisations; private sector entities with relevant technical expertise; and multidisciplinary consortia comprising local and/or international partners. Applicants should demonstrate experience and expertise in several of the following areas:

- Strong programme coordination and capacity-building experience, including management of multidisciplinary programmes, stakeholder engagement and facilitation, technical working groups, training, mentorship, knowledge dissemination, and science communication.
- Demonstrated technical and scientific expertise in water quality monitoring, environmental chemistry, emerging contaminants, ecotoxicology, public health risk assessment, wastewater and drinking water management, environmental microbiology, antimicrobial resistance monitoring, and digital/environmental data systems.



- Proven laboratory and analytical capability, including advanced analytical instrumentation, method development and validation, quality assurance and quality control systems, standardisation, and interlaboratory coordination and proficiency testing.
- Experience in water governance, environmental regulation, policy and standards development, regulatory benchmarking, comparative international analysis, and institutional strengthening related to water quality and CEC management.
- Demonstrated financial and partnership management capacity, including management of multi-year funded programmes, donor or co-funded initiatives, partnership development, and mobilisation of additional resources for programme sustainability.

Preference will be given to proposals that demonstrate strong partnership models and sustainable co-investment mechanisms are preferred. In particular, preference will be given to proposals that demonstrate an intent to secure a formal partnership or memorandum of understanding with DWS's Resource Quality Information Services (RQIS), including explicit commitments to: (a) using some of DWS's existing monitoring sites, (b) archiving data on DWS's WMS, and (c) building capacity within DWS. Co-funding may include direct financial contributions, personnel time and secondments, laboratory access and analytical services, equipment and infrastructure support, data-sharing platforms and digital systems, training and capacity development support, international technical assistance; and/or contributions from industry, development partners, or participating institutions.

6. Budget

Total budget: The indicative funding allocation available through the WRC is approximately R5 million over 5-years.

Yearly allocations: These funds shall be disbursed according to the following yearly allocations:

Year 1: R 400,000.00

Year 2: R1 200 000.00

Year 3: R1 200 000.00

Year 4: R1 000 000.00

Year 5: R1 200 000.00